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REPORT

TO THE

Government of Saskatchewan

BY THE

ANTI-TUBERCULOSIS COMMISSION

PUBLISHED UNDER THE DIRECTION OF THE
HON. J. M. UHRICH,

Minister in Charge of the Bureau of Public Health



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Report of the Saskatchewan Anti-Tubercul



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CORRECTIONS

NOTE:

Page 19, line 21 should be "51.7%" instead of "54.6%."

Page 26, line 18 should be "11" instead of "8."

Page 26, line 19 should be "51.7%" instead of "54.6%."

Table No. XX. in the conclusion, the word "croup" should be "group."

CORRECTIONS

NOTE

Page 10, line 21 should be "21.75" instead of "24.45"
Page 20, line 3 should be "11" instead of "3"
Page 20, line 19 should be "21.75" instead of "24.45"
Table 26, 1/2, in the conclusion, the word "group" should be
"groups"

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PROVINCE OF SASKATCHEWAN

Report

of the

Saskatchewan Anti-Tuberculosis
Commission,

PERSONNEL OF COMMISSION

A. B. COOK, Esq., Regina, *Chairman*
R. G. FERGUSON, M.D., Fort Qu'Appelle
J. F. CAIRNS, Esq., Saskatoon
R. H. BRIGHTON, Esq., Regina, *Secretary*



REGINA:
J. W. REID, King's Printer,
1922.

REGINA, SASKATCHEWAN.

October 1, 1922.

HIS HONOUR THE HONOURABLE HENRY W. NEWLANDS,

Lieutenant Governor of Saskatchewan.

MAY IT PLEASE YOUR HONOUR,—

I have the honour to transmit herewith the report of your Commission, appointed by Order in Council No. 7578, of July 22, 1921, to enquire into the question of tuberculosis in Saskatchewan, and to recommend to your Honour measures to efficiently deal with the problem.

I have the honour to be, Sir,

Your obedient servant,

A. B. Cook,

Chairman of Commission.

My dear Sir,

I have the honor to acknowledge the receipt of your letter of the 14th inst.

in relation to the proposed extension of the term of office of the members of the Board of Directors of the New York and New Jersey Canal Company.

The Board of Directors of the Company have considered the same and have decided to extend the term of office of the members of the Board for another year.

I am, Sir, very respectfully,
Your obedient servant,

I have the honor to transmit herewith the report of your Committee on the proposed extension of the term of office of the members of the Board of Directors of the New York and New Jersey Canal Company. The report is dated the 14th inst. and is in conformity with the resolution of the Board of Directors of the Company passed on the 14th inst.

I am, Sir, very respectfully,
Your obedient servant,

Very respectfully,
Your obedient servant,

J. B. Loomis

(Attorney at Law)

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W. Hall, M.D., Fort Qu'Appelle, Sask.
R. E. Monteith, M.D., Balcarres, Sask.
H. C. Hall, M.D., Fort Qu'Appelle, Sask.
G. McG. Stuart, M.D., Cupar, Sask.
J. M. McLean, M.D., Stoughton, Sask.
J. W. Stewart, M.D., North Battleford, Sask.
J. H. Jackson, M.D., North Battleford, Sask.
F. H. Hurlbut, M.D., North Battleford, Sask.
L. A. C. Panton, M.D., North Battleford, Sask.
H. C. George, M.D., Regina, Sask.

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H. Gray, M.D., Saskatoon, Sask.
G. R. Morse, M.D., Saskatoon, Sask.
C. H. Freeman, M.D., Moose Jaw, Sask.
A. N. Hardy, M.D., Regina, Sask.
J. McLeod, M.D., Regina, Sask.

Dentists.

A. E. Chegwin, D.D.S., Moose Jaw, Sask.
J. Rubenstein, D.D.S., Regina, Sask.
S. H. Minion, D.D.S., Regina, Sask.
E. S. Kirkpatrick, D.D.S., Creelman, Sask.
J. G. Countryman, D.D.S., Saskatoon, Sask.

Veterinary Surgeon.

M. P. McClellan, V.S., Regina, Sask.

Radiographer.

H. S. Uren, Esq., Saskatchewan Sanatorium.

X-Ray Services.

Saskatchewan Sanatorium, Fort Qu'Appelle.

City Hospital, Saskatoon.

Providence Hospital, Moose Jaw.

General Hospital, Regina, Sask.

These hospitals placed their X-ray departments at the disposal of the commission during the survey.

Nurses.

Nurse M. Montgomery, Lady Superintendent, Saskatchewan Sanatorium.

Nurse T. McCallum, Saskatoon, Sask.

Nurse M. Berrie, Saskatoon, Sask.

Nurse H. Riddell, Moose Jaw, Sask.

Nurse H. Dayman, Regina, Sask.

Nurse I. Lauder, Regina, Sask.

Nurse I. Chandler, Regina, Sask.

Nurse H. Shaw, Regina, Sask.

Nurse L. Gray, Saskatchewan Sanatorium.

Nurse F. Simpson, Saskatchewan Sanatorium.

Nurse F. R. MacElhanney, Saskatchewan Sanatorium.

Nurse V. Wright, Saskatchewan Sanatorium.

Miss D. Trueman, Saskatchewan Sanatorium.

It is desired to make special mention of the services rendered by Nurse J. McKenzie and Nurse H. H. McDonald, who were placed at the disposal of the commission through the courtesy of the Director of School Hygiene, Miss Jean Browne. These ladies remained on the staff of the commission throughout the entire survey. Their experience in the examination of school children proved of inestimable value.

The Commission wishes to make mention of assistance given by Doctor Armstrong, National Tuberculosis Association, New York, and Doctor D. A. Stewart, Manitoba Sanatorium, Ninette, for suggestions made in regard to the technical material contained in this report.

To all those who attended sessions of the commission and presented their views on tuberculosis, and reviewed the situation in their respective districts, the commission is deeply grateful.

The Commission desires to place on record its appreciation of the courtesy shown, and assistance rendered by the various Government departments, school boards, principals and teachers throughout the survey.

Order in Council

On July 22, 1921, an "Order in Council" was approved, appointing and constituting a commission to enquire into the question of tuberculosis in the province. The text of the "Order in Council" directs that the commission shall inquire into:

1. The extent to which tuberculosis exists in the province.
2. The percentage of:
 - (a) Curable cases;
 - (b) Incurable cases;
 - (c) Inactive cases.
3. Consideration of the Provincial Sanatorium at Fort Qu'Appelle in its relation to the problem.
4. Consideration of present arrangements with general hospitals throughout the province in relation to tuberculosis.
5. Consideration of methods of prevention most suitable for dealing with:
 - (a) Curable cases;
 - (b) Incurable cases.
6. Consideration of methods of prevention of tuberculosis.
7. Consideration of organisation and methods of administration.
8. To enquire into all matters relating to the subject.

REPORT OF THE SASKATCHEWAN ANTI-TUBERCULOSIS COMMISSION

ORGANISATION.

A meeting of the Commission for organisation purposes was held in Regina on the eighth day of August, 1921, when, after considering the instructions to the Commission, the following methods of obtaining information and data were decided upon:

1. To print 5,000 pamphlets (*see* appendix), setting out the aims and objects of the commission. These pamphlets were distributed to all ex-patients of the Provincial Sanatorium, to all reeves, councillors, and secretary-treasurers of municipalities, hospital boards, physicians, school boards, medical health officers, city councils, and others.

2. To distribute to all physicians in the province, a *questionnaire* requesting information regarding the incidence of tuberculosis in their practices. (*See* appendix.)

3. To hold sessions of the commission at the following places:

Prince Albert, Tuesday, Sept. 27, 10.30 a.m.
Saskatoon, Wednesday, Sept. 28, 2.00 p.m.
North Battleford, Friday, Sept. 30, 10.00 a.m.
Moose Jaw, Tuesday, Oct. 4, 10.00 a.m.
Regina, Thursday, Oct. 6, 10.00 a.m.
Swift Current, Monday, Oct. 31, 8.00 p.m.
Weyburn, Tuesday, Nov. 1, 8.00 p.m.
Yorkton, Thursday, Nov. 3, 10.00 a.m.

Special invitations to attend the sittings of the Commission were submitted to the members of all municipalities, city councils, hospital boards, school boards, medical associations, and medical health officers. Steps were also taken through the medium of the press to advise the general public as to the place and time of these sittings to enable those who so desired to attend.

4. To conduct a series of tuberculin diagnostic skin tests upon groups of school children in representative areas in the province. Particulars of the number tested and the results obtained will be found in the tables forming part of this report.

5. To complete a home survey of economic living conditions and health of families with special reference to exposure to tuberculosis.

6. To carry out a tuberculin test for bovine tuberculosis among the cows supplying milk to the children receiving tuberculin test.

Your Commission throughout the enquiry endeavoured to ascertain the actual facts of the situation as affecting the province as a whole, rather than as pertaining to any particular class or locality.

SITTINGS OF THE COMMISSION.

Much valuable information was obtained and many suggestions were made at the sessions of the Commission held at all the cities in the province. Prior to the date of the meetings, the following circular was sent to the various organizations and bodies interested in tuberculosis.

September 13, 1921.

DEAR SIR,—

There will be sittings of the Saskatchewan Anti-Tuberculosis Commission at the times and places enumerated hereunder, for the purpose of enquiring into questions relating to tuberculosis in Saskatchewan.

Prince Albert, Tuesday, Sept. 27, 10.30 a.m. Council Chamber, City Hall.
 Saskatoon, Wednesday, Sept. 28, 2.00 p.m. Council Chamber, City Hall.
 North Battleford, Friday, Sept. 30, 10.00 a.m. North Battleford Library.
 Moose Jaw, Tuesday, Oct. 4, 10.00 a.m. Council Chamber, City Hall.
 Regina, Thursday, Oct. 6, 10.00 a.m. Council Chamber, City Hall.
 Swift Current, Monday, Oct. 31, 8.00 p.m. Council Chamber, City Hall.
 Weyburn, Tuesday, Nov. 1, 8.00 p.m. Council Chamber, City Hall.
 Yorkton, Thursday, Nov. 3, 10.00 a.m. Council Chamber, City Hall.

Your board is invited to have not more than two representatives present to take part in the proceedings.

The discussion will cover the following questions:

1. Should tuberculosis patients be treated in general hospitals, or should they be cared for in institutions specially designed and equipped for the purpose?
2. How should the cost for necessary buildings, equipment and treatment be apportioned as between municipalities, the provincial government, and the patient?
3. What responsibility should the municipality be required to assume with respect to their own tuberculous residents?
4. What responsibility should the provincial government be required to assume in order to assist in providing treatment for tuberculosis patients?

After the questions above referred to are dealt with, opportunity will be given to any persons present, to introduce for discussion, any phase of the tuberculosis question.

Yours very truly,

A. B. Cook,

Chairman.

SHOULD TUBERCULOSIS BE TREATED IN GENERAL HOSPITALS?

This subject was thoroughly discussed at each sitting, and it was the consensus of opinion that tuberculosis should not be treated in general hospitals. It was pointed out that the location and surroundings of a building intended for tubercular patients were of importance.

General hospitals were invariably situated in large cities, and in this country usually planned to occupy the least possible space. The danger of cross infection was one of the most important objections raised. Usually a hospital patient is one whose resistance to infection is lowered, therefore the danger of infection from a tubercular patient is notably increased. The absence in general hospitals of the attention needed, such as specialised medical and nursing services, and of the necessary facilities for successfully treating the disease, were among

the points discussed. Doctor Young, representing the city of Saskatoon, and the Union of Municipalities, in discussing this point, said in part:

"General hospitals are designed for general work; it is impossible to have special wards as are required for the efficient treatment, and the ultimate eradication of tuberculosis, unless we have special and separate buildings equipped for the purpose. General hospitals have not expert physicians or specially trained nurses who can take care of tubercular patients. The control of advanced cases, and the necessary discipline required over the incipient cases, to prevent cross-infection, cannot be maintained in general hospitals."

A resolution passed by the hospital board of the city of Regina, and endorsed by the city council, dealing with this question states:

"Owing to the nature of the disease, namely, its infectious nature, and also the fact that hospital patients are often ones of lowered resistance to infection, we would not consider it at all advisable to attempt the treatment of tuberculosis along with other patients found in the wards of a general hospital. Furthermore, the environment of and plan of buildings of most general hospitals are not well adapted to the treatment of tuberculosis."

Considering the unanimity with which these opinions are held, throughout the province, your Commission were not surprised to find so few tubercular patients being treated in hospitals in the province, as is evinced in another part of this report.

COST OF BUILDINGS AND EQUIPMENT.

There were no two opinions expressed with respect to this question. The opinion of all may be summed up in the following resolution passed by the hospital board of Regina, and later receiving the endorsement of the city council:

"The cost of buildings and equipment, we believe, should be borne by the province at large. These should be sufficiently equipped to care for all tubercular patients within the province who might require to go there. We consider that there is ample justification for taxing all the people for this in the fact that it is not only the patient himself, but his family and the community who will be benefited by him receiving treatment within an institution, and the danger of spreading infection to others being lessened."

COST OF TREATMENT.

The question of cost of treatment brought forth prolonged discussion and various opinions. Among the proposals made for meeting the cost of treatment the following seemed the most favoured:

- (a) That the cost of treatment should be paid by the patient when in a position to do so, and in cases where he is not, by the public;
- (b) That where a patient is unable to pay for his treatment, a portion of the cost should be borne by the municipality and the balance by the government.

In connection with (a) a resolution from the Regina General Hospital Board states:

"The cost of maintenance for the patient while in the hospital should be borne in part by the patient when it can be shown that he is in a position

to do so, and in part by the province at large. The reason for dividing the maintenance cost is that all patients do not wish the same accommodation in hospitals, or sanatoria, and when they are in a position to meet this added expense, it is only right that they should have the service.'

During the discussion on this subject the condition at present existing at the Provincial Sanatorium at Fort Qu'Appelle was outlined by the chairman of the Commission. It was stated that treatment there is standardised regardless of the patient's financial standing. Treatment is the same for everyone, and everyone is satisfied.

Considerable discussion took place on suggestion (b), several representatives pointing out that the municipalities should bear a portion of the cost of maintenance where it was found that a patient was unable to do so, and the provincial government should provide the balance. Strong objection was raised to this suggestion by several persons at the meeting who knew of cases where municipalities after giving aid, had seized land and chattels to reimburse themselves, leaving the families with insufficient support. Another point discussed under this head was the act which required all municipalities to become responsible for indigent patients after thirty days residence.

It was pointed out that indigents naturally gravitate to centres of population, and that in this way cities and towns have to assume a much heavier liability than rural municipalities. Discussing the question of free treatment, a representative took the position that as long as the patient was a potential menace to the health of the community it was the duty of society to provide for him. He was in favour of asking people to pay who were able to pay, but was opposed to the municipality from which the patient came being interrogated as to his financial circumstances, because that placed people in the humiliating position of asking for charity, and operated as a deterrent to favourable recovery. He suggested a per capita tax.

The following resolutions passed by the Union of Saskatchewan Municipalities at their annual convention in June, 1921, were placed before the Commission for consideration:

1. WHEREAS under existing legislation, municipalities in this province must make provision for sick destitutes who have resided within the municipality for thirty days; and whereas in the case of rural municipalities, the expense of maintaining even one or two patients at a cost of \$2.50 per day, per patient, in a hospital or in the Fort Qu'Appelle Sanatorium is a serious burden, resulting in such municipalities using every possible means of shifting responsibility for the treatment of such persons to the shoulders of the larger urban centres;

Whereas in addition, persons falling ill while residing in country districts naturally drift to the larger centres where better care and treatment may be secured; and

Whereas for the reason stated, the larger centres of population throughout the province are called upon to assume the expense of treating many cases of illness which should be borne by other municipalities, especially in the case of those suffering from tuberculosis, whose condition is seldom, if ever, discovered by the authorities until after the lapse of thirty days:

Therefore be it resolved that the Legislature be asked to so amend the law that the expense of caring for such destitutes will be equally distributed over the entire province, preferably by the government providing for the treatment of all such cases.—Carried.

2. That, having carefully considered the question of the treatment and the costs of treatment of tubercular patients, we desire to impress upon the provincial government the desirability of providing, so far as possible, adequate

provincial sanatoria for all such patients requiring hospital treatment, and that the cost of treating said patients, whether treated in a provincial or municipal sanatorium, should, when the patient is unable to pay, be paid by the province.—Carried.

The question of nursing services, clinics, contacts and other subjects allied to the cure and prevention of tuberculosis, were thoroughly discussed at each of the sessions. The information and suggestions received have been given careful consideration by your Commission in making their recommendations.

GENERAL.

In view of the fact that this report is the result of the first investigation of the problem of tuberculosis in Saskatchewan, and as the information contained herein is intended to assist the general public as well as the government, to familiarise themselves with the disease, the following facts should be understood by the reader:

1. Tuberculosis is not now considered hereditary.
2. Infection with "Tubercle Bacilli" usually takes place during childhood.
3. The most dangerous period for infection to take place is during the first three years of life.
4. The highest death rate occurs in the first and second years of life.
5. Twenty-five per cent. of all infection among children comes from milk and milk products.
6. Healthy adults can withstand considerable infection.
7. Principal causes of breakdown after infection are, undernourishment, impure air, overwork, insufficient rest, and attacks of other infectious diseases.
8. Tuberculosis is preventable, and, in the early stages, curable.
9. Patent medicines are of no assistance in curing the disease and are usually harmful.
10. The only known cure consists of abundance of fresh air, sunshine, wholesome food and rest.
11. The greatest danger of infection is to children in a home where a member of the household is in the advanced stage of the disease.
12. The greatest danger to the public is the careless cougher and spitter.
13. Many people are in the advanced stage before they become aware of the presence of the disease.
14. Bad teeth, adenoids, and diseased tonsils are contributing causes in the breakdown of children previously infected.
15. The undernourished child is the most susceptible to the disease.

THE RELATION OF TUBERCULOSIS IN MAN, CATTLE AND FOWL.

The investigation of tuberculosis in man and animals has shown that there are at least three important and distinct types of tubercular germs: the Human, the Bovine (that found in cattle) and the Avian (that found in birds). All attempts made to transform one type into the other have so far been unsuccessful. The Human "Tubercle Bacillus" causes disease in man, but is insignificant as a cause of tuberculosis in cattle, hogs or fowl. When Human infection does occur in these animals it does not spread among them. Practically speaking, cattle, hogs and fowl do not get tuberculosis from man.

The Avian Tubercle Bacillus causes disease in fowls, but does not cause tuberculosis in man, cattle or hogs; in other words, hens get tuberculosis from hens.

The Bovine Tubercle Bacillus causes disease in cattle and hogs and man, but not in fowl. The Bovine tuberculosis, however, does not spread to any extent from humans to humans, or from hogs to hogs, but man and hog become infected individually from the cow. Man gets tuberculosis from man, or from milk and milk products of the cow.

DEFINITIONS OF TERMS USED.

INFECTION.

The germ of tuberculosis—the Tubercle Bacillus—enters the body by passing through the mucous membrane lining the throat or intestines.

Having entered, it lodges somewhere in the body. Here the germ multiplies and produces poisons. The presence of this foreign germ stimulates certain tissue cells to multiply in the area around the germ. These cells multiply until a thick wall of fibrous tissue completely surrounds the germs. The name “tubercle” is given to this centre of infection surrounded by a wall of fibrous cells.

Such a tubercle may vary in size from that which can be seen only under the microscope, to that of the size of a pea. When such centre is so walled off that the poisons do not escape to any extent, there are no symptoms of tuberculosis whether the enclosed germs are still alive or not.

A person in whom there are such centres, although at the time in no way suffering from the disease, will react positively to the skin test for tuberculosis. These walled-off germs may remain alive for years, but are harmless so long as completely sealed up.

DISEASE.

If the harbourer, or infected person, takes an acute infectious disease, such as whooping cough, measles or influenza, or becomes under-nourished or overworked, the resisting forces of the body are reduced, and if it happens that a tubercle containing live germs becomes unlocked, a fresh number of tubercle bacilli will pass into the blood or lymph stream, and lodge somewhere, say, in the lungs, which most commonly happens.

Under conditions described, the physical resistance is so low that the walling-off process is delayed and the germs increase faster than the enveloping action can proceed. The poisons are set free and circulate through the body causing symptoms, i.e. loss of appetite, loss of strength, loss of weight, and fever. When these symptoms have developed, the person is suffering from the disease tuberculosis.

If the area affected by the disease is sufficiently large, the local inflammation causes increased secretion in the surrounding air tubes. This gives rise to cough and expectoration, which are later symptoms of the disease.

CLOSED OR NON-INFECTIOUS CASES.

Persons suffering from tuberculous disease where the area affected is so completely walled off that no secretion passes into the air tubes, the sputum, if any, does not contain the germs of tuberculosis.

OPEN OR INFECTIOUS CASES.

Where the area affected has opened into an air tube, so that the germs and secretions from the affected area pass into the air tubes and are coughed up, the sputum contains germs of the disease. It must not be expected that germs will be found in every specimen; they may be found only in occasional samples.

BREAKDOWN.

Breakdown is the term used to describe that crisis when the disease so far overcomes the resisting forces of the body that marked symptoms and illness ensue, and the body requires assistance such as rest to recover the balance of resistance.

RELAPSE.

Relapse is the term which describes a recurrence of symptoms of the disease of such severity as to necessitate treatment. Relapse is a second breakdown.

CLIMATE.

There is no special climate for the treatment of pulmonary tuberculosis. A comparison of the statistics from sanatoria located in different varieties of climate, other things being equal, shows very slight differences in the results of treatment. (*See appendix.*)

MEDICAL SURVEY OF SCHOOL CHILDREN.

The groups of school children selected for examination in eight (8) rural and urban centres were as representative of the school children of Saskatchewan as could be found. No individual selection was made. Every child in a school-room was included in the investigation regardless of age, nationality, sex, or physical condition.

School children were selected for intensive study; first, because children are most easily taught. If the fundamental facts regarding tuberculosis, or right and wrong living, are grasped by the school children, they will find intelligent application in the whole community in the next generation. In the second place, the care of children gives the best means for prevention of disease. During the pre-school and school years, children receive their primary tuberculosis infection, and develop resistance against the disease. The greatest possible care should be given them at this critical age, and every effort made to safeguard against the development of active tuberculosis.

Again, it was considered that a study of the sources and means of infection and conditions which make for breakdown would suggest ways by which infection might be lessened, and resistance increased in the case of those already infected.

SOURCES OF INFORMATION.

An examination was made, therefore, of 1346 public school children and 226 teachers undergoing training in a normal school for evidence of tuberculosis infection and disease, and for the discovery of causes that might contribute to the development of the disease.

At the same time there was made also a survey in the homes of the children regarding economic and living conditions, and also the health of the family, with special reference to tuberculosis.

Cows were examined for tuberculosis in all cases where the milk supply to the child was not under the supervision of the local department of health.

Vital statistics of the province with reference to the areas selected were carefully studied.

METHOD OF EXAMINATION.

The examination consisted of two parts. A preliminary, or selective examination for the purpose of selecting suspects; and a final diagnostic examination of all children selected as suspicious by the preliminary examination. The method of selection of cases was as follows:

All children received the tuberculin test and had an afternoon temperature and pulse taken. These were taken in the class-rooms, the thermometer remaining in the mouth ten minutes. Those whose temperature was above 99.4 or had a marked acceleration of pulse had both temperature and pulse checked the following afternoon. In the meantime all weights had been recorded and reduced to variation from normal; the teeth and tonsils had been examined by the specialists and findings recorded. The children appeared at the 48 hour interval to have the result of the first tuberculin test recorded; if negative, it was repeated. On this occasion the chest specialist palpated the cervical region for glands, and examined the child's chest for conformation, movement, venous arborisation and evidence of winged scapulæ.

The quantities in the problematic equation for the selection of suspect cases were then: (1) undernourishment; (2) elevated temperature; (3) accelerated pulse; (4) glandular enlargement; (5) flat chest; (6) limitation of chest movement; (7) physical energy; (8) activity in sports; (9) tuberculin reaction. (For detailed analysis of the information secured in regard to the above signs and symptoms, see tables 1 to 22 in appendix.)

Taking into account these signs and symptoms, and making allowances for reaction in the case of focal infection and acute upper respiratory diseases, these cases were sifted down to those considered suspicious of tuberculosis, and the latter were selected for complete chest examination.

THE TUBERCULIN TEST.

The tuberculin test was given to all children examined without exception. When negative or doubtful it was repeated once. (The technique of the test as used is given in the appendix.)

As is now pretty generally known, the tuberculin test shows the presence of tuberculous infection. Though the whole subject cannot be discussed in this report, it must be pointed out at least that infection as indicated by the test does not necessarily mean that *active* disease is present. It means only that the seeds of the disease have been already implanted. This implantation may or may not grow into active disease requiring treatment. In the majority of cases it does not.

PREVALENCE OF INFECTION AMONG SCHOOL CHILDREN.

Tuberculin tests made, as stated, on 1346 children in eight districts showed a reaction in 763 or 56.6 per cent. This means that in 56 out of each 100 children, infection by tuberculosis had already taken place. (See table No. 1.) The percentage of reaction was higher among males than females, 57 per cent. in the boys as compared with 54.9 per cent. in the girls.

The age comparison is of especial interest. As will be seen in table No. 1, at six years, about the time a child begins school attendance, 44 per cent. were already infected, and each year above six shows an increase in the percentage reacting. At the age of fourteen 61 per cent. were found to be infected.

Contrary to what might be expected, the percentage of Indian children infected is very high, being 92.5 per cent., as compared with 54 per cent. for children of all other racial origins. (See table No. 1.)

The following detailed statement will show that white children born in Saskatchewan were found to have an infection percentage of 51, while of those examined born in other provinces, the percentage was 50. While no definite conclusions could be drawn, the inference is that infection among Saskatchewan born was at least equal to infection among those born in other provinces of Canada. The infection percentage among British born was found to be considerably higher than among Saskatchewan born. The numbers born in Continental Europe and in the United States were too small to justify comparisons.

The data, such as it is, however, would tend to show that tuberculous infection among Saskatchewan born white children, is less widespread than is infection among the children of our immigrants as a whole, in the proportion of 51 to 54 per cent., but is slightly more widespread than among children born in other provinces of Canada in the proportion of 50 to 51 per cent. The details of the comparison follow:

Place of birth	No. of children examined	Per cent. infected
Born in Saskatchewan (including Indians).....	845	58.9
Saskatchewan born Indians.....	162	92.5
Saskatchewan born (not including Indians).....	683	50.7
Born in Canada, outside Saskatchewan	238	50.0
Born outside Saskatchewan (Canada, Great Britain, Europe)	501	54.9
Born in British Isles.....	165	61.2
Born in United States.....	64	42.0
Born in Europe (France, Germany, Roumania, and Russia)	34	52.0

COMPARISONS WITH SURVEYS ELSEWHERE.

It may be asked how the results of this survey compare with those of similar surveys carried out in other countries and communities. Such a comparison follows:

Survey	No. of children examined	Age group	Per cent. infected
St. Louis (Veeder & Johnson).....	479	6-14	31.9
Vienna (Hamburger & Monti).....	219	6-14	72.2
Saskatchewan	1,254	6-14	56.4
Framingham	94	6- 7	45.7
Saskatchewan	45	6- 7	44.4
Vienna (Von Pirquet).....	1,147	10-14	70.0
Saskatchewan	795	10-14	57.4

From the above it is evident that the school children of Saskatchewan are extensively infected with tuberculosis, though not so badly as those in the large city of Vienna. Nevertheless they are more widely infected than might be expected in a province having but seven small cities, no manufacturing centres, and a population almost wholly rural and employed in agricultural occupation.

The seeds of the disease were found in homes of every class, and the children of rural communities were almost as generally infected as those of cities. The highest and lowest percentages of infection found in the cities were 63.5 per cent, and 36 per cent., and in the villages and rural communities 61.3 per cent., and 34.9 per cent.

TUBERCULOSIS IN CHILDREN BELOW SCHOOL AGE (1-5 YEARS.)

People in general regard tuberculosis as almost wholly a disease of adult life. This is entirely a wrong idea. That infection is widespread also in children is illustrated by the reaction of 44 per cent. of the children in the 6-7 age group, and not only infection, but active disease also is very prevalent in childhood. It is not generally known that in every country and practically every community the death rate from tuberculosis is at its very highest in the first year of life, the second year also having a very high mortality.

During the past four years 125 children under five years of age have died from tuberculosis in Saskatchewan, one-third of whom died during the first year of life. (See table No. VII.)

In the past, the energies of anti-tuberculosis organisations have been directed almost entirely against tuberculosis in adults, while the same disease in infants and children has been largely neglected. A child at birth is free from tuberculosis, even if one or both parents have tuberculosis, either at the time of its conception or birth.

The child is born with relatively little immunity or ability to combat tuberculosis, but this immunity should increase year by year.

On account of lack of resistance, infection during the first three years of life, more frequently than at any other age, results in disease, and tuberculosis in children under three years of age is more often fatal than in later years.

The percentage showing infection increases steadily with age during childhood. In Saskatchewan, at six years it has reached 44 per cent.; at fourteen years 60.9 per cent., and at twenty years 80 per cent.

To cope in any measure with tuberculosis it would seem essential that every means possible be used to prevent infection in the young children. The infant from birth through the first three years of life *must* be protected from "Tubercle Bacilli." Infants though non-tubercular at birth, but born of parents suffering from active disease usually get grossly infected if not removed from their parents.

Weinberg, in an investigation of 18,000 children from 5,000 families, found that the nearer the birth of the child was to the death of the tuberculous parent, the higher was the mortality among the children. (Weinberg: *Die Kinder der Tuberkulösen* Leipzig, 1913, cited by Fishberg, *Pulmonary Tuberculosis*, Lea & Febiger, Phila. and New York, p. 447.)

MEASURES OF PREVENTION FOR CHILDREN OF PRE-SCHOOL AGE

The conclusion would appear to be self-evident that if a mother is tuberculous, especially if she has lung tuberculosis, and germs in her sputum, the infant should be removed immediately after birth and contact avoided during the first three years of its life.

No person who is actively tuberculous, even a parent, should live in the same house with a child under three years of age.

With this protection against human tuberculosis, must be combined protection against bovine tuberculosis, which causes 25 per cent. of the deaths from tuberculosis among children.

The problem here is really threefold; first, to provide "preventoria" for new born children of actively tuberculous mothers; second, to provide the means whereby actively tuberculous fathers can be cared for while separated from their young children; and finally, to protect all children under three years of age from tuberculous infection, removing them if necessary from their homes.

In all modern organisations for the prevention and eradication of tuberculosis, it is becoming more evident that a determined effort should be made to prevent the development of this disease in the children who are members of families where open cases of tuberculosis have occurred. Especially is this true where one or both of the child's parents have during the lifetime of the child been active spreaders of the disease.

Children healthy and vigorous at birth very often become infected during the first few years of life, and if allowed to remain in the surroundings frequently found accompanying this disease, rapidly lose their resistance to it and become active themselves with little chance for their recovery.

Your Commission is of the opinion that steps should be taken by the Saskatchewan Anti-Tuberculosis Organisation to prevent this from happening.

A practical and economical method to accomplish this is to adopt such features of the Grancher system as are suitable in this province. (For further information re "Oeuvre Grancher System" see appendix.)

It is to be noted that in connection with the Grancher system no children are provided for except at the request of their parents, and that all foster homes are recommended by the family physician and are under medical supervision at all times.

The children are not lost to their parents but are returned to them in fully normal condition.

SOURCES OF INFECTION.

MILK AND MILK PRODUCTS.

Recent investigations have shown that at least one tuberculous child in every four is infected by milk and milk products.

The people in general are just beginning to see the menace of bovine tuberculosis and the need for active measures to safeguard the health of their children. Needless to say, therefore, investigation of the milk supply to the children examined was considered a most important part of the Saskatchewan survey.

In districts in which raw milk, that is, milk not pasteurised or boiled, was in use, 18.3 per cent. of milk cows were found to be tuberculous.

Of 40,242 tuberculin tests in 612 herds examined by Dominion veterinarians in the two-year period ending September, 1921, 18.5 per cent. were found to be tuberculous. (Accredited herd system, Dr. Hilton, Ottawa, ninth annual convention W.C.L.S.U.)

This would tend to show that dairy cattle in Saskatchewan are as widely infected as those of the Dominion at large. Of so important a part of the survey the results should be given in detail.

Group No. 1.

Of the 89 cows, twelve or 13.4 per cent. reacted to the tuberculin test, and one was classed as suspicious. All cows in this group were supplying milk for family use.

From four of the herds in this group, milk was sold also to outside families. The tuberculin test applied to 176 children in this district revealed 108 or 61.3 infected.

Group No. 2.

Of the 53 cows in this group, nine or 16.9 per cent. reacted. From seven of the herds milk was being sold for outside consumption. The tuberculin test applied to 132 children in this district, showed 63, or 47.7 per cent. infected.

Group No. 3.

Of the 29 cows in this group, forming one herd only, six or 20.6 per cent. reacted to tuberculin, and four were considered suspicious. This herd was the sole milk supply of the children attending the school examined. The tuberculin test applied to 101 children in this school revealed 94 reactors, or 93 per cent.

Group No. 4.

Of the 14 cows in this group, all in one herd, seven, or 50 per cent. reacted. These cows, like those in group 3, were the sole milk supply for the children attending the school. Fifty-six children out of 61 in this school, or 91.8 per cent., were shown by the tuberculin test to be infected with tuberculosis.

A summary of the results of the tests of dairy herds is as follows:

	No. tested	Reactors	Per cent. reactors	Suspi- cious	Per cent suspicious
Group No. 1.....	89	12	13.4	1	1
Group No. 2.....	53	9	16.9	..	..
Group No. 3.....	29	6	20.6	4	13.7
Group No. 4.....	14	7	50.	..	..
Total	185	34	18.3	5	2.7

NOTE.—Groups 3 and 4 supply Indian children attending schools operated by the Department of Indian Affairs.

Experimental studies carried out by the United States Bureau of Animal Husbandry, and reported in Public Health Bulletin No. 41, show that 15 per cent. of the milk from cows suffering from tuberculosis contain tubercle bacilli. Further, Roseneau, formerly director of the Hygiene Laboratory, United States Public Health Service, summarising the findings of the English commission, the German commission and the results of experimental work done by Krumweids and Park of the City Health Department Laboratory, New York, reports that 25 per cent. of tuberculosis found in children between the ages of 1 and 16 years, is caused by drinking raw milk from tuberculous cows.

At the present time there is only one abattoir in Saskatchewan under the inspection of the Federal Health of Animals Branch, and the inspection carried on there appears to have been instituted largely to prevent the export of diseased meat from the province.

It appears to your Commission that if it is necessary to inspect meat for this purpose, it is most important that the people of this province should not be allowed to consume uninspected food at home, especially if there is any possibility that the meat rejected is offered to them for food.

INFECTION IN THE SCHOOL.

It will be seen in table No. 1 (Incidence of infection) that during the period of attendance at school (6-14) years, the percentage found infected increased from 44.4 per cent. to 60.9 per cent.

Among the 1184 white children examined, 10, or practically 1 per cent. (.84%) were found to have gone beyond the stage of infection, and to be suffering from active tuberculosis.

One does not need expert knowledge of disease to see plainly that a child with actual disease really ill, following the routine of an ordinary school, shut within doors for six hours a day, and closely associated with other children, is not only sacrificing his own chance of recovery, but is a definite menace to the other children as well. A child so diseased should be removed from school at the very moment the disease is detected, both to give himself a chance of recovery under suitable conditions, which are wholly inconsistent with school attendance, and to remove from the school a very great menace to the health of the other children.

The public school is notoriously a spreading place of many dangerous infections, such as measles, scarlet fever, diphtheria, whooping cough, influenza, and even common colds. When to these are added tuberculosis, (and about one child in one hundred in Saskatchewan is found to have symptoms and signs of active tuberculosis) it is surely desirable that thorough medical inspection of schools should be arranged for without delay. Besides the 10 children definitely diseased, found among the 1184 white children examined, 30 others or 2.5 per cent. of the total, showed signs so suspicious of active tuberculosis that it was considered necessary to refer them to their family physicians for prolonged observation. These children are not at present considered a source of danger to other children, but require special consideration in the way of rest, diet and general surroundings, if they are to keep infection from developing into active disease.

It is for such children that modifications of the ordinary school routine, and special conditions such as are provided in open air schools, are most necessary.

INFECTION IN HOMES.

Ten per cent. of the children examined had a history of exposure at some time in their homes to persons suffering from tuberculosis. In the representative areas from which the children were selected, 753 persons had died of the disease during the past four years, 488 of whom had died at home without having had a special training in the precautions necessary to be observed for the protection of others.

The exposure of children to persons suffering from open and advanced disease is undoubtedly the most serious source of infection.

Of the 753 deaths mentioned above, 89 were children, of whom 71 died in their homes. To a lesser extent than with adults can the danger arising from sickness of children in their own homes be controlled by education. Children cannot be expected to carry out absolutely the rules of hygiene, and it is next to impossible to keep the sick and well children in a home separated.

EVIDENCE OF IMMUNITY AMONG WHITE CHILDREN.

The facts that among 1184 white children examined (of whom 51 per cent. were infected) no glands were found enlarged sufficiently to necessitate treatment or to justify a diagnosis of tuberculous glands, that no discharging glands were found, and only four, or one-third of one per cent., bore the scars of glands which had previously discharged, supplies important evidence of the high natural immunity or resistance of our white children. Among the Indian children, enlarged and discharging glands were so common as to indicate a low natural immunity. Further, the type of disease found among the white children examined, who showed signs of tuberculosis whether active or arrested, was in every case characteristic of the more or less chronic disease which is found among people who have high natural immunity. This fact is further supported by the type of disease found in patients admitted to the sanatorium. A study of 1445 cases showed that 96.7 per cent. were found to be suffering from slowly developing chronic disease, while only 3.3 per cent. suffered from acute generalised disease.

PREVALENCE OF CONDITIONS WHICH DEVELOP TUBERCULOSIS INFECTION.

UNDERNOURISHMENT.

The standard used by the Commission to calculate nourishment was that prepared by Dr. Thomas D. Wood and is that which has been adopted by the Department of School Hygiene of this province.

Of the 1346 children examined, 11.3 per cent. were five pounds or more under weight for their height and age, and in general appearances also, were classed by the examiners as definitely undernourished. (*See table No. II.*)

These under-par children were not confined to any one class, but were found in about the same proportions among the urban and rural populations, among the poor and better off, and in families of employers and employed.

That undernourishment is one of the greatest known factors in the development of tuberculous disease has been proved by conditions which prevailed during the great war. In the Balkan States, Austria, Germany and the occupied portions of France and Belgium where children were deprived of essential nourishing food, there has been a tremendous increase in tuberculous disease.

TEETH.

Good health is incompatible with bad teeth and diseased gums. Defective teeth interfere with proper chewing of food, and thus are a cause of undernourishment. They also provide lurking places for harmful germs and their poisons, which cause various general infections throughout the body.

Of the 1346 children examined 47.1 per cent. had one or more decaying permanent teeth. (*See table No. III.*)

Lack of care of the mouth and decay of teeth seem to bear a direct relation to tuberculous infection. The reaction rate is 13 per cent. higher in children with badly kept mouths than in others, and higher also in those with decayed teeth than in those whose teeth were sound.

TONSILS.

25.3 per cent. of the children examined by specialists were found to have diseased tonsils, and 18.8 per cent. had excessive adenoid tissue (*see* table No. IV.). The poisons from diseased tonsils are absorbed and passed into the blood-stream. One effect is to upset the digestion and spoil the appetite, and lack of appetite is just as serious as lack of food. Both result in undernourishment. Centres of infection such as decaying teeth, abscesses of the gums, pyorrhoea, and diseased tonsils reduce the bodily resistance and let down the bars for tuberculosis.

HOME CONDITIONS.

Home conditions surveyed in the areas selected were found excellent in 5.7 per cent. of the homes, good in 84.8 per cent, and bad in 9.4 per cent. Among the white children living under bad conditions the percentage of infection was found to be 8 per cent. higher, being 63.3 per cent., as compared with 54.6 per cent., the average for all examined.

ILLNESSES THAT PREDISPOSE TO TUBERCULOSIS.

Epidemics of acute diseases, especially the so-called diseases of childhood, such as measles, influenza and whooping cough, are frequently forerunners of tuberculosis. An attack of such acute diseases not only reduces the general vitality but during the attack temporarily suspends resistance to other disease. The child harbouring tuberculosis infection may have its resistance to that disease so disorganised by an attack of measles, whooping-cough or influenza, that immediately following the attack it develops symptoms of tuberculosis.

An inquiry as to the prevalence of illnesses predisposing to tuberculosis revealed the fact that 34.1 per cent. of the 1,184 white children examined had suffered from measles, whooping cough or influenza, and that 16.3 per cent. had had a series of three or more acute infectious diseases.

49.3 per cent. gave no history of predisposing illnesses.

The prevalence of acute infectious diseases in the community is shown by an analysis of the case histories of the 226 teachers, averaging eighteen years of age, undergoing training in a normal school, and included in the survey.

Their record of infections suffered, was as follows:

Tubercular infection shown by skin test.....	171	75.6%
Measles	123	54.4%
Whooping cough	49	21.6%
Influenza	111	48.5%

Measles and Whooping Cough.....	15	6.6%
Measles and influenza	39	17.2%
Whooping cough and influenza.....	5	2.2%
Measles, whooping cough and influenza.....	23	10.1%
Diphtheria	17	7.9%
Scarlet fever	25	11 %
Typhoid	14	6.1%
Chicken Pox	70	20.9%
Smallpox	2	.8%
Pneumonia	28	12.3%
Pleurisy (with insidious onset)	14	6.1%
Bronchitis	18	7.9%
Asthma	4	1.7%
Jaundice	1	.4%
Tonsillitis	2	.8%
Rheumatism	4	1.7%
Mumps	54	23.8%
Infantile paralysis	1	.4%
Meningitis	1	.4%
Malaria	1	.4%
Neither measles, influenza, nor whooping cough.....	48	21.2%
No history of acute infections	28	12.3%

There is no doubt that the various infectious diseases are frequently forerunners of active tuberculosis.

To lessen this danger, the various infectious diseases must as far as possible be eliminated. This can be done in any measure, only by a general intelligent enforcement of the regulations concerning these diseases and by making the medical inspection of schools much more general. As these infections are brought under control, tuberculosis will be lessened also.

FREQUENCY OF ACTIVE TUBERCULOSIS AMONG WHITE SCHOOL CHILDREN.

Only those in whom symptoms and physical signs suggested active tuberculosis were given a complete chest examination.

1184 children had the preliminary examination. Of these 286 or 24 per cent. were considered suspicious, and were given the full diagnostic chest examination. Of this number 45 had X-ray pictures of the chest made.

10, or .84 per cent., were found to have active tuberculosis and treatment was advised. In all of these the diagnosis was confirmed by X-ray examination. 30 or 2.5 per cent., had chest signs and symptoms suggestive of activity and were referred to their physicians for observation. 15 of these were confirmed as tubercular by X-ray examination; 37, or 3.1 per cent., showed signs of apparently arrested old lesions, and 20 of these cases were confirmed by X-ray examination.

TUBERCULOSIS IN FAMILIES OF MOTHERS RECEIVING AID UNDER THE MOTHERS' PENSIONS ACT.

An interesting feature of your commission's investigations is the information obtained regarding the prevalence of tuberculosis in the families of the mothers who are receiving charitable assistance from the provincial government under the provisions of *The Mothers' Pensions Act*.

A *questionnaire* was prepared and forwarded to all mothers who were receiving government assistance, asking a series of questions regarding the prevalence of tuberculosis either in their own families or in the families from which they came. 436 replies were received from the 480 *questionnaires* sent out.

The following table shows the relationship to the mothers themselves of those who have had, or are at present suffering with, the disease:

	Father	Mother	Brother	Sister	Husband	Son	Daughter	Widow	Total
Living	2	4	6	5	7	9	18	12	63
Dead	9	15	24	31	57	2	5	....	143
Total	11	19	30	36	64	11	23	12	206

It will be noted that 57, or 13 per cent., of the 436 mothers heard from were widowed by reason of tuberculosis, and that there are 27 children of these mothers at present suffering from the disease. 12 of these mothers receiving pensions are themselves suffering from tuberculosis. One hundred and forty-three deaths from tuberculosis have taken place in these families, and there are at present sixty-three active cases among the families heard from.

From the foregoing, it is evident that a large amount of the charitable assistance required by these families is caused by the impoverishing conditions surrounding tuberculosis. When it is realised that the amount of monthly assistance given by the government to these unfortunate people has now reached the sum of fifteen thousand eight hundred dollars (\$15,800), it must be evident that if a large part of the money now being expended had been used to prevent tuberculosis it would have accomplished much more to insure happiness and conserve human life than can possibly be hoped for under the present conditions.

These families should be carefully examined and when necessary, all preventative measures undertaken that will lessen the development of further disease, thereby improving the health of our people and reducing the cost to the province for care of those who develop tuberculosis.

INCIDENCE OF INFECTION AMONG ADULTS.

For information regarding infection among the young adult group the pupils of Regina normal school, 226 in number, and at an average age of eighteen, were selected. Their homes being scattered throughout the southern half of the province, they could be considered fairly representative of young adults in cities, towns, and rural communities. Of this group 75.6 per cent. gave positive reaction to a tuberculin skin test (*see* table No. V), thus indicating a previous tuberculous infection. Their medical histories showed that fourteen, or 6.1 per cent., had had at some time a definite attack of pleurisy. The close association of pleurisy with tuberculosis is well known.

INCIDENCE OF DISEASE AMONG ADULTS.

NORMAL SCHOOL PUPILS.

This group consisted of 226 adults, average age 18 years. As regards physique, reference to their examination cards shows that they were above the average. All showing signs or symptoms suspicious of active disease were, according to the principle of selection applied to the public school children, examined and X-rays taken. In all sixty-four examinations and sixty-two radiographs were made. Among the 226 pupils two cases, or 8 per cent., were found to be suffering from active tuberculosis.

INCIDENCE AMONG THOSE CALLED UP UNDER MILITARY SERVICE ACT.

During the operation of *The Military Service Act* in Canada, from January 1, 1918, to November 11, 1918, 17,436 males (that is about ten per cent. of the men) between the ages of eighteen and forty-five were called up in Saskatchewan for service. Of this number, 338 or 1.9 per cent., were rejected, because of signs of tuberculosis of the lungs. While this was not a complete or uniform survey, it was representative and extensive and gives the best idea as to the frequency of tuberculosis among adult males in this province.

INCIDENCE OF ACTIVE DISEASE AT ALL AGES AS DEDUCED FROM VITAL STATISTICS.

During the year 1921, there were, in Saskatchewan, 311 deaths from tuberculosis (*see* Table No. VI). It has been found wherever a complete examination of an area of population has been made, that about nine active cases exist in a community for every reported death. This estimate was confirmed recently in the Framingham Survey, where one-half of a community of 17,000 were examined by specialists.

Applying this proportion to our 311 deaths we should have at present 2,799 cases of active tuberculous disease in Saskatchewan.

Deaths from tuberculosis among the Indian population are not included in the above figures as they are not reported to the statistical department of the provincial government. Deducting the Indian population of the province, 10,040, the death rate per 100,000 for whites is 41.4.

It will be seen that the number of active cases deduced from the mortality statistics of the province is lower than the military service examinations indicate. Doctor A. H. Perry, special statistician of the United States Bureau of Labour Statistics, after checking up 805 reported deaths as having been caused by tuberculosis, with the families and their physicians at Framingham, stated in his final report that 22 per cent. should be added to reported deaths from tuberculosis in that community.

Such addition in Saskatchewan would increase the deaths for 1921, to 379, and the active cases, reckoned in the proportion of nine cases to one death, to 3,311, or 50.5 per 100,000 of the population.

KNOWN ACTIVE CASES REQUIRING TREATMENT.

Out of four hundred and eighty-eight physicians circularised,, four hundred and seven sent replies to the commission's *questionnaire* requesting information regarding the incidence of tuberculosis disease within the radius of their own practice.

The results obtained through this channel were as follows:

Hopeful adults requiring sanatorium treatment for pulmonary tuberculosis	501
Hopeful adults requiring sanatorium treatment for non-pulmonary tuberculosis	183
Reported as under observation on account of suspicious symptoms....	434
At present under treatment in the mental hospital, North Battleford....	31
Hopeless adults requiring bed treatment for non-pulmonary tuberculosis	57
Hopeless adults requiring bed treatment for pulmonary tuberculosis	143
	—1,349
Children under fourteen years requiring sanatorium treatment for pulmonary tuberculosis	158
Children under fourteen years requiring sanatorium treatment for non-pulmonary tuberculosis	118
	— 276
	1,625

In addition to the above, seven hundred and eleven (711) cases were reported by the physicians as having received treatment in the past and having apparently arrested disease.

INDIANS IN SASKATCHEWAN.

There are resident on the numerous reserves within Saskatchewan, 10,040 Indians, of whom 864 are attending the several Indian schools.

A general examination was made by the commission of all the children attending two of the most important schools conducted under the direction of the Department of Indian Affairs. The results lead to the conclusion that the Indians of Saskatchewan are infected by tuberculosis to a much greater extent than the white population, and should be receiving more attention for the prevention and cure of the disease than can be given in connection with the existing facilities. (See Table No. I.)

Although provision is made by the department for a limited amount of medical supervision of the Indians on reserves, as well as of those attending the schools, it would appear that the occasional visit of non-resident physicians to these wards of the government cannot provide more than the attention necessarily given to those actually sick. Measures necessary to detect and prevent the development of tuberculosis can under the circumstances be applied only to a limited extent, and not nearly so actively as the seriousness of the situation demands. Your commission has been informed that four nurses have been recently assigned to work among the Indians of Saskatchewan. It is hoped that this measure will result in considerable betterment of health conditions among the Indians. At the present time, the tuberculous Indians have little or no provision made for their care, excepting the limited accommodation afforded them from time to time at the Saskatchewan Sanatorium. The accommodation for them there is, as might be expected, very much restricted. owing to the demands made

upon it for the care of the white residents of the province, and because it is felt by the management of the institution that special measures ought to be taken by the Department of Indian Affairs to care for them. A joint arrangement between the Department of Indian Affairs and the Saskatchewan Anti-Tuberculosis League, that would provide satisfactory protection for the Indians, is advisable. By reference to the table of results (*see* Table No. I), it will be seen that among the one hundred and sixty-two Indian children collected from reserves in southern and central Saskatchewan examined, 92.5 per cent. were found to be already infected with tuberculosis. This is about twice as high as the percentage found among white children of equal ages, who were examined. Although the ages of the children examined in these schools ranged only from 6 to 16 years, the average percentage of infection is as high as is found among adult whites.

Owing to the low standard of living of many of the Indians, their ignorance of even the elementary requirements of personal hygiene and their meagre knowledge of measures for the prevention of tuberculosis, the disease is frequently well established before it comes to the notice of the physicians, who are usually called upon only when really serious conditions exist. Again, the natural superstition of the race, and their fondness for their own method of dealing with disease, are not the least of the difficulties in the way of early treatment of tubercular cases among them. The agents, priests, ministers, physicians and school teachers, who are engaged in work among the Indians, should be impressed with the necessity of protecting their charges against the disease. They are usually looked upon by the Indians as persons of superior knowledge, and their instruction and advice will usually be well received, even if not always acted upon. Persons occupying these important positions should be familiar with modern methods of combating tuberculosis so that they may give the Indians correct and reliable advice.

The milk supply of the reserves, as well as of the schools, should be carefully inquired into. It is evident from the large number of gland, bone and skin infections occurring among Indian children, that they are being subjected to a large amount of bovine infection.

From evidence obtained by examination of the herds supplying milk to the two Indian schools surveyed (*see* milk as a source of infection), it is apparent that drastic measures should be applied to eradicate tuberculosis from among the Indian cattle if any improvement is to be made among the Indian population. So long as diseased milk is allowed to be consumed by the children, numerous infections will be inevitable and the number of cases urgently requiring treatment will remain large.

The Indian child is naturally inclined to outdoor life and does not appear as well adapted to close confinement during long school hours as the white child. It is therefore recommended that these children, while attending school, should be encouraged to spend as much time as possible in the open air, and that in all schools, an abundance of fresh air should be admitted to the classroom. Additional rest periods should be provided for the physically sub-normal and

their school hours limited to their physical capacity. In connection with all the Indian schools, open air sleeping dormitories would be of advantage in preventing the development of tuberculosis, as without an abundance of fresh air, and wholesome food, a large percentage of these highly infected children must break down and develop active disease. It is much easier, and cheaper also, to prevent the disease than to provide for the care of the patient after the breakdown occurs.

PRESENT ANTI-TUBERCULOSIS FACILITIES IN SASKATCHEWAN.

THE ANTI-TUBERCULOSIS LEAGUE.

The Saskatchewan Anti-Tuberculosis League is the only organisation in Saskatchewan engaged exclusively in combating tuberculosis, and it appears to enjoy the confidence of the public organisations in the province. A great deal of assistance has been given to the league in its work by this friendly and sympathetic co-operation.

The sanatorium at Fort Qu'Appelle is owned and operated by the league, which is composed of seventy trustees, chosen from representative men in the province. From among the trustees, twelve are chosen at the annual meeting to act on the board of directors. The provincial government also appoints three to represent it. These fifteen directors constitute the board of management and hold regular monthly meetings to carry on the business of the organisation. The books of account showing all sources of revenue and expenditure are kept under the direction of the provincial auditor, and audited by him each year. The members of the organisation are most active and energetic in the affairs of the league and are devoting their best efforts toward providing every possible means to combat tuberculosis.

THE SANATORIUM.

The Saskatchewan Sanatorium is situated on the north shore of Echo lake, two and a half miles up the valley from the historic village of Fort Qu'Appelle, and enjoys a most suitable location for an institution of this kind, situated as it is in a beautifully treed and hill-surrounded ravine. The hills completely protect the institution on all sides except the south, and form an admirable background to the semi-circle of sanatorium buildings. In this valley, the long hours of sunshine in the clear atmosphere peculiar to this latitude can be taken advantage of to the full.

The sanatorium was opened for the admission of patients in the autumn of 1917, with accommodation for sixty patients. It has steadily grown, building after building, until it is now one of the largest and best equipped institutions for the care of tuberculosis to be found in Canada.

At present, facilities are provided for the care of three hundred patients, including seventy children. The entire institution is taxed to the utmost to provide treatment for those suffering with tuberculosis, and at all times, large numbers have been refused admission owing to the shortage of bed space to care for them. There

is only one class of treatment given at the sanatorium; this is of a sufficiently high standard for those who are able to pay the cost of their treatment to desire no better.

SANATORIUM TREATMENT.

One thousand, nine hundred and fifty-two patients suffering with tuberculosis have been admitted for treatment to the Saskatchewan Sanatorium between its date of opening, October 10, 1917, and July 31, 1922.

Of the 1,952, 1,234 or 63.2 per cent. were males and 718 or 36.8 per cent. were females. The larger percentage of males was due, no doubt, to the number of ex-soldiers treated.

One hundred and ninety-one of the total number treated were children under sixteen years of age. Accommodation for children was not available during the first two years of the operation of the sanatorium.

The children's pavilion presented to the League by the Imperial Order of the Daughters of the Empire, was opened in January, 1920, and at present 20 per cent. of the patients are children.

Since the opening of the institution, there have been treated 643 ex-soldiers suffering from tuberculosis. This number constitutes 32.9 per cent. of all patients treated. The number of beds required for the treatment of ex-soldiers has decreased steadily from 160 in 1919, to 60 at the present time, or about 24 per cent. of the total.

NATIVITY.

The place of birth of patients admitted for treatment is important in a province undergoing rapid colonisation. This information throws light upon our public health as well as upon our immigration problem.

Of the 1,952 sufferers admitted to July 31, 1922, the general nativity was as follows:

Canadian born	956 or 48.9%
British born	572 " 29.8%
American born	163 " 8.3%
Foreign born	261 " 13.3%

The following is the nativity in detail:

Canadians	902	Hungarian	4
English	358	Indians	39
Americans	163	French	15
Welsh	18	German	14
Ukrainians	8	Syrian	2
Russians	49	Dane	4
Scotch	134	Flemish	1
Irish	62	Ruthenian	8
Icelandic	7	Scandinavian	2
Norwegian	38	Jewish	4
Bohemian	3	Chinese	6
Polak	19	Italian	1
Belgian	7	Bulgarian	1
Finlander	3	Greek	1
Swedish	42		
Austrian	33	Total	1,952
Newfoundlander	4		

OCCUPATIONS.

From a study of the occupations of the 1,952 patients admitted for treatment up to July 31, 1922, it would seem that the occupation of a patient, whether indoor or outdoor, has very little to do with developing tuberculosis. It has been found that 825 or 42.2 per cent. of the patients were following outdoor occupations. This fact will be a surprise to many, as the belief is prevalent that those whose work was carried on largely in the open air were less likely to become victims of this disease. The following are the occupations of the patients admitted:

Students	43	Barbers	8
School teachers	50	Waiters	7
Housewives	374	Loggers	8
Salesmen	21	Mechanics	4
Shoemakers	1	Blacksmiths	2
Farm help	51	Tailors	8
School children	191	Conductors	1
Farmers	524	Photographers	3
Painters	8	Mariners	9
Domestics	48	Cooks	2
Real estate agents	2	Janitors	4
R. C. M. P.	19	Jewelers	7
Clerks	120	Engineers	5
Nurses	19	Physicians	1
Laborers	219	Opticians	4
Electricians	9	Lawyers	1
Dressmakers	11	Printers	2
Motormen	2	Brakeman	1
Storekeepers	8	Policemen	2
Miners	3	Butchers	2
Priests	1	Nuns	1
Auditors	1	Druggists	9
Stenographers	33	Milliners	6
Ministers	5	Miller	1
Hospital attendant	1	Teller	1
Porters	1		
Linemen	3		
Operators	11	Total	1,952

AGE.

A study of the age by groups of the 1,445 patients discharged prior to December 31, 1921, was made. The details are shown in the following table:

Age Groups of 1,445 Discharges.

Age	Male	Female	Total	Percentage
Under 10	12	22	34	2.3
11-15	26	37	63	4.3
16-20	108	79	187	12.9
21-25	224	123	347	24.
26-30	179	98	277	19.1
31-35	145	64	209	14.4
36-40	112	48	160	11.
41-50	85	32	117	8.09
Over 50	25	19	44	3.03
No record	6	1	7	.48
	922	523	1,445	100.

The above table shows that, as far as the Saskatchewan Sanatorium is concerned, practically all (81%) of the patients treated to date have

been in the age groups between 16-40; and further, that nearly one-half of these have been in the groups between 21-30, that is, that 43% of all patients treated belong to the young adult group.

From these figures it might appear that tuberculosis is a disease almost entirely of adult life. This, however, is not true, neither for tuberculosis generally, nor even in Saskatchewan. In the first place, the period covered by the above table of discharge represents a period when there were many soldier patients, and further the small percentage of patients under 16 years of age, is due to the fact that prior to January 1, 1920, there was no accommodation for children in the sanatorium. At the present time, 20% of the total number of patients in the institution are children under 16 years of age.

CLASSES OF PATIENTS TREATED.

One thousand, four hundred and forty-five patients were discharged up to December 31, 1921. Of this number, 128 after examination and observation, were found to be suffering from diseases other than tuberculosis. These were discharged as non-tuberculous. One thousand, three hundred and seventeen were found to have tuberculosis. Of this number, 129 remained in the sanatorium less than one month and, because of the short period during which they remained at the sanatorium, received merely a diagnosis and advice. These patients were classed as tuberculous untreated. The remaining 1,188 were classed as tuberculous treated. It is from a study of this latter group that an idea of the results of treatment in the sanatorium can be obtained. (For details of this classification see tables No. 21 and 22.)

LENGTH OF STAY OF "TUBERCULOUS TREATED."

The average length of stay of "tuberculous treated" civilians was 4.34 months, and of military patients of this class, 7.15 months. The longer period of treatment in the case of military patients was made possible by the financial provision available. It was further noted that practically all of the untreated were civilians; the principal cause for the inability to take treatment being lack of financial provision.

The average length of treatment for patients admitted as incipient was 4.9 months, as compared with 6.04 months for the moderately advanced, and 7.46 months in the case of patients in the advanced stages of the disease. The longer period in the case of the latter, although a less favourable result was obtained, shows the necessity of early diagnosis, so that patients may be treated in the early stages of the disease.

STAGE ON ADMISSION.

The stage of the disease on admission of the 1,188 tuberculous patients discharged to December 31, 1921, is shown as follows:

Early or incipient	279	or	23.4%
Moderately advanced	412	"	34.7%
Far advanced	403	"	33.9%
Hopeless on admission	73	"	6.14%
Tuberculosis, other than pulmonary	21	"	1.7%

During 1921, a more suitable class of patients has been referred by the physicians of the province. The fruits of the anti-tuberculosis work is now evident in the class of patients being admitted. During the year, apart from the patients sent to the sanatorium for treatment, more than one person a day (399 in all) has been referred by the physicians to the sanatorium for diagnosis.

Of those referred, ninety were admitted for treatment. The result of this closer co-operation with the physicians, has been that a larger percentage of early and more suitable cases are being recommended for treatment. The improvement has just begun and it is hoped that if diagnostic clinics and a consultation service to assist the family physicians could be established, the percentage offering themselves for treatment in the early stages can be greatly increased.

IMMEDIATE RESULTS OF SANATORIUM TREATMENT.

The immediate results secured by the 1,188 patients while under treatment in the sanatorium are shown by the following discharge classifications of these patients.

Arrested	29 or 2.44%
Apparently arrested	241 " 20.28%
Quiescent	347 " 29.20%
Improved	303 " 25.50%
Unimproved	136 " 11.44%
Hopeless	25 " 2.10%
Died	107 " 9.00%

The casual reader, unfamiliar with the disease, might consider these results disappointing, unless he remembered that tuberculosis is a chronic illness. Pneumonia and typhoid fever, for instance, are acute conditions. They begin suddenly, are of short duration, and generally end in a given time. On the other hand, tuberculosis is an insidious disease, usually becoming apparent only after months of indisposition—having a course of uncertain duration and reaching a stage of improvement called "arrested" only after all signs and symptoms have been absent at least six months.

The tendency to, and the occurrence of relapse, is so great that even after the patient has had his disease "arrested" for two years under ordinary living and working conditions, he is considered, not actually, but "apparently cured."

The average treatment period of patients in Saskatchewan Sanatorium is 5.4 months, so that it is evident that only a few will be arrested, the greater number being discharged in the other stages of improvement, with advice to continue the treatment at home.

As the period necessary to obtain a permanent result is long, and the time that can be spent in an institution in most cases is limited, the contribution of the sanatorium in reclaiming the tubercular sick must be largely educational, indicating the mode of life leading to a cure. The condition of patients on discharge is not so much an index of the permanent results, as are the follow-up reports of these patients, showing how they stand up in the years after discharge. The more permanent results are to be found in the section on follow-up work.

RELAPSES.

One of the outstanding facts about tuberculosis is the tendency of the disease to relapse. By relapse is meant a second breakdown giving rise to symptoms indicating need for treatment. This may occur in cases where the disease has been apparently arrested or even apparently cured. Usually there is an outside cause discoverable in the living or working conditions of the individual, accounting in part, at least, for this second breakdown, but occasionally no such cause can be found, and the relapse in such cases is presumed to be due to the inability of the individual to resist the disease.

The following table shows the number of relapses among 1,188 tuberculous patients discharged, from the opening of the sanatorium—October 10, 1917, to December 31, 1921. Some of these relapses were readmitted to the Saskatchewan Sanatorium; some admitted to other sanatoria, and others remained at home.

Year of discharge	No. relapses re-admitted to Sask. Sanatorium	Admitted to other Sanatoria	Remained at home	Total relapse	Total No. T. B. treated discharges	Percentage relapses per year
1918.....	20	....	2	22	133	16.54%
1919.....	39	1	8	48	329	14.58%
1920.....	41	4	2	47	396	11.86%
1921.....	13	2	....	15	330	4.54%
	113	7	12	132	1,188	

A study of the causes of the relapses was made in order to ascertain in how far they might be prevented. The following classification of causes followed as closely as was possible that used by the board of sanatorium consultants, so as to admit of comparison.

Classification of Causes of Relapses.

1. Insufficient treatment originally	44 or 33.30%
2. Intercurrent disease (influenza, pneumonia, etc.).....	14 " 10.60%
3. Concurrent disease (asthma, syphilis, etc.).....	9 " 6.81%
4. Overwork	19 " 14.30%
5. Unhygienic living conditions	13 " 9.80%
6. Unhygienic working conditions	1 " .75%
7. Indiscretion, whether in morals or recreation	18 " 13.60%
8. Unexplainable	10 " 10.60%
9. Pregnancy	0

From the above table it is seen that insufficient treatment originally is the principal cause of relapse, accounting for 44 or 33.3 per cent. of the whole. This cause could be largely removed if adequate financial provision could be made for treatment, so that it would not be necessary for patients to return home until they had secured the maximum benefit from treatment.

Next in importance is overwork, which accounts for 19 relapses or 14.3 per cent. This factor is also financial and could be lessened in many cases if part time employment could be secured by patients for the first six to twelve months after discharge.

Indiscretions in morals and recreations come next, accounting for 18 or 13.6 per cent. of relapses. This cause, which depends upon the

co-operation of the patient, is the least amenable to improvement, and little can be done to reduce it apart from a more thorough sanatorium education and more adequate follow up care.

In addition to the above patients who have been re-treated on account of relapse, ninety others have returned for more treatment without having relapse, the principal causes for readmission being (1) observation and examination, (2) patients discharged with progressive disease and later readmitted on compassionate grounds, (3) patients who transferred to other sanatoria and later were re-admitted direct from these institutions.

OCCUPATIONS AND RELAPSES.

Occupation in relation to relapse was investigated. The findings are set out in the following table. Nineteen who were unable to work, relapsed. This number was made up largely of those who had had insufficient treatment originally. The numbers engaged in various occupations are too small to justify any conclusions but it will be noted that the "indoorness" and "outdooriness" have very little bearing on the frequency of relapse, as the numbers were 55 in the former as compared with 58 in the latter.

Occupation	Treated in Sask. Sana- torium	Treated else- where	Outdoor	Indoor	Unable to work
Baggageman	1	....	1	....	....
Bootlegger	1	....	1	....	....
Brakeman	1	....	1	....	....
Bandmaster	1	1	1	....	....
Clerk	12	3	....	15	....
Carpenter	2	....	2	....	....
Domestic .....	....	1	....	1	....
Farmer	27	3	30	....	....
Housewife	12	3	....	15	....
Housework	1	....	....	1	....
Janitor	1	....	....	1	....
Labourer	13	1	14	....	....
Lineman	1	....	1	....	....
Librarian .....	....	1	....	1	....
Laboratorian	1	....	....	1	....
Nurse	1	....	....	1	....
Orderly	2	....	....	2	....
Painter	3	....	3	....	....
Policeman	1	....	1	....	....
R. C. M. P.....	1	....	1	....	....
Street car conductor	2	....	2	....	....
Stenographer	2	....	....	2	....
Student	3	1	....	4	....
Teacher	4	....	....	4	....
Telegrapher	1	1	....	2	....
Unable to work.....	17	2	....	....	19
Waiter	2	....	....	2	....
Watchmaker .....	....	1	....	1	....
Ward aid .....	....	1	....	1	....
Shoemaker	1	....	....	1	....
—	—	—	—	—	—
	113	19	58	55	19

FOLLOW UP RESULTS.

The more permanent results of sanatorium treatment are shown by a study of the 1,188 tuberculous treated discharges. This figure represents 1,090 persons, as 98 of the 1,188 received treatment more than once.

The report of the present condition, as estimated by the patients themselves at July 31, 1922, was derived from *questionnaires* sent to these 1,090 persons inquiring as to their ability to work and the presence of symptoms of disease supplemented in the case of some of the ex-soldiers by the D.S.C.R. visiting nurses' report.

Year discharged	Well and working	%	Symptoms light work	%	Symptoms unable to work	%	Died	%	Unheard of	%	Total
1918.....	44	41.90	19	18.09	5	4.76	31	29.52	6	5.71	105
1919.....	114	40.56	55	19.5	24	8.54	75	26.69	13	4.62	281
1920.....	106	28.72	62	16.80	68	18.42	97	26.28	36	9.75	369
1921.....	97	28.95	53	15.82	99	29.55	73	21.79	13	3.88	335
	361	33.12	189	17.34	196	18.	276	25.32	68	6.23	1,090

A further study of the present condition of these persons as estimated by physicians, is given below, the sources of information being (1) reports from patients' own physicians, (2) reports from Pension Board medical examiners, (3) sanatorium information on patients who returned for the purpose of being re-examined.

Year discharged	Apparently cured No.	Per cent.	Arrested No.	Per cent.	Apparently arrested, No.	Per cent.	Quiescent No.	Per cent.	Improved No.	Per cent.	Unimproved No.	Per cent.	Died No.	Per cent.	Unheard of No.	Per cent.	Total No.
1918.....	26	24.7	16	15.2	9	8.5	8	7.6	2	2.8	7	6.6	31	29.5	6	5.7	105
1919.....	46	16.3	44	15.6	39	13.8	31	11.	12	4.2	21	7.4	75	26.6	13	4.6	281
1920.....	9	2.4	38	10.3	73	19.7	43	11.6	20	5.4	53	14.3	97	26.2	36	9.4	369
1921.....	.....	.....	12	3.5	80	23.8	76	22.6	21	6.2	60	17.9	73	21.7	13	3.8	335
Totals.....	81	7.4	110	10.	201	18.4	158	14.4	55	5.	141	12.9	276	25.3	68	6.2	1,090

It was hoped that by approaching the follow-up work from two angles, that of the patient himself, and that of his physician, that more complete information could be secured. The group "well and working" as estimated by the patients themselves, should correspond more or less to the groups apparently cured, arrested, and apparently arrested, taken together, as classified by the physician.

As was actually found, the former single group constituted 33 per cent. of the whole, and the latter combined groups 35 per cent. Further, those with symptoms and light work correspond closely to those classed by the physicians quiescent.

The above follow-up report, which is the most accurate information available of the permanent results in the case of patients treated in the sanatorium will be most encouraging to those suffering from the disease, and very gratifying to those who have supported the institution.

A study was also made grouping the patients according to stage of disease on admission, in order to determine the effect of stage of disease upon permanent results.

STAGES AND RESULTS.

Classification on discharge	Well and working		Light work		Unable to work		Died		Unheard of		Totals	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Incipient	139	55.1	54	21.4	27	10.7	15	5.9	17	6.7	252	100
Mod. Advanced ..	169	45.2	81	21.7	69	18.4	31	8.2	23	6.1	373	100
Far Advanced	49	11.	47	10.5	94	21.1	232	52.2	22	4.9	444	100
Tuber. non-pul. ..	4	19.	7	33.3	6	28.5	2	9.5	2	9.5	21	100
Totals	361	33.1	189	17.3	196	17.9	280	25.6	64	5.8	1,090	100

From the above table it will be seen that as the stage of the disease advances, the result of treatment depreciates, *i.e.*, the number well and working diminishes from 55 per cent. to 11 per cent., and the number of deaths increased from 5 to 52 per cent. according as the patient is admitted in the incipient or the advanced stage of the disease. When one bears in mind what has already been shown regarding the average length of treatment required for patients in the different stages *i.e.* (as the disease increases from the incipient to the advanced stage, the average period of treatment extends from 4.9 to 7.46 months) one realises the futility of late treatment, and is impressed with the necessity of early diagnosis and treatment.

Because of the large percentage of advanced cases admitted who require prolonged bed treatment, only a comparatively small number of beds are available for early acute cases. Therefore the usefulness of the institution to the public has been seriously reduced.

THE PROBLEM OF AFTERCARE.

Tuberculosis is a disease cured not quickly nor easily, nor even completely, but needing long continued treatment to accomplish a halting or an arrest of activity. Of those found diseased, by no means all are able or willing to remain under treatment long enough to make the maximum improvement possible for them. And the maximum possible in some with advanced disease even though it is improvement falls very short of cure. Indeed "cure" is a term not applied to patients when they leave the sanatorium, but it is to be earned after treatment only by standing up to the work test for a few years under ordinary living and working conditions. A very small proportion of patients are discharged from the sanatorium classed even as "apparently arrested", more as having "quiescent" disease (quietened down), while a large number on discharge can be described merely as improved.

In view of these facts, the following-up of patients discharged from the sanatorium can be seen to be of great importance. Especially is this true in the case of those who for some reason or other, have to leave the sanatorium before treatment is completed.

The need is further emphasised by the fact that tuberculosis is a disease characterised by relapse. As shown in the section on relapse 11.1 per cent. of patients discharged from the sanatorium are found to have already relapsed and required retreatment.

Of all tubercular patients, both treated and untreated discharged from the sanatorium up to July 31, 1922, 1,110 are still living. The present facilities for treatment in Saskatchewan, consisting of the 300 bed sanatorium at Fort Qu'Appelle, will discharge approximately 500 patients annually.

The period during which aftercare is most essential is the first five years following discharge. The Medical Research committee, England, from a follow-up investigation of patients discharged from King Edward VII Sanatorium, Midhurst, found that taking all classes and conditions on discharge together, the maximum mortality occurred at about two years after discharge. Otto May, medical health officer for the Prudential Life Assurance company, has found that the one class, namely, patients classified on discharge from sanatoria as having their disease arrested, show a mortality which steadily increases to a maximum in the fourth year after discharge. From this time it decreases, and by the seventh year has dropped approximately to the ordinary mortality rate.

An anti-tuberculosis organisation treating and discharging 500 patients annually will, according to the known facts regarding the mortality among tuberculous patients, after five years, have approximately 1,650 patients to follow-up. At the end of this period those alive will be in such condition, or will have gained such an experience with the disease, that they will require an examination and advice only occasionally. About fifty per cent., according to the type of patients admitted for treatment at the present time in Saskatchewan, will, by financial necessity, be doing ordinary work one year after discharge, and will require more frequent examinations and constant advice. The remainder of those living will need more or less bed care, and will require a good deal of nursing supervision and medical advice.

Apart from a study of the after results of treatment in the Saskatchewan Sanatorium, the following literature was especially reviewed:

The care and employment of the tuberculous ex-service man after discharge from the sanatorium. (Confidential report No. 6—(1-12-20)—submitted by the Board of Tuberculosis Sanatorium Consultants.)

The condition of patients twenty years after discharge from the Trudeau Sanatorium. By *Fred H. Heise*, Saranac Lake, New York. (Volume III. 1919-20, American Review of Tuberculosis) to the Dept. S.C.R., Ottawa.

A Report of Twenty Years work in the treatment of Tuberculosis at the New Mexico Cottage Sanatorium, with an estimation of the part played by Climates. By *E. S. Bullock and F. T. Fahlen*. (American Review of Tuberculosis—Volume VI—August, 1922.)

The Expectation of Life of the Consumptive after Sanatorium Treatment. By *Noel Dean Bardswell*, Medical Superintendent, King Edward VII Sanatorium, England.

Some Aspects of the Tuberculosis Problem in Life Assurance. By *Otto May, M.D.* (Principal Medical Officer to the Prudential Assurance Co.) (Tubercle—Volume 1—No. 4. January, 1920.)

Pulmonary Tuberculosis: Mortality after Sanatorium Treatment. (Medical Research Committee, Special Report series No. 33.) Published by His Majesty's Stationery Office, 1919.

CAUSES OF DELAY IN COMMENCING TREATMENT.

During the visit of the Commission to the sanatorium at Fort Qu'Appelle many of the patients receiving treatment there were personally interviewed in the hope that information obtained from them would disclose the principal reasons for delay in commencing treatment.

Several group meetings were called in the pavilions at which the patients gathered for discussion of their individual experiences. From information gathered it would appear that the principal reasons preventing early treatment from being undertaken were:

First—Difficulty in accurate diagnosis by family physicians, so as to convince the patient that treatment was necessary, the resulting delay being often attended with serious consequences.

Second—Reluctance to admit the presence of tuberculosis unless the physician could produce to the patient indisputable evidence of the disease.

Third—Inability of patients in the incipient stages of the disease to provide the necessary money to pay the cost of their treatment, and their objection to municipal charity, often delayed treatment until the patient is compelled to undergo a long and tedious "cure," involving at the onset a period of complete rest in bed.

Fourth—Unwillingness of patients, especially the mothers of families, to travel so far from their homes for treatment and to be separated from their families for the length of time required to effect a complete cure.

It would appear from the foregoing that every practicing physician should be encouraged to take a post-graduate course in a sanatorium where tuberculosis in all its stages is treated.

All the assisting diagnostic facilities of the sanatorium should be at their disposal and they should be made to feel that they have a right to assistance from that institution in the same degree as they have to many other helpful agencies of modern medical methods. Early treatment is so important to the patient that no risk should be taken. Neglect to check the disease in the early stage is so serious that permanent recovery is seldom made. Patients suspected of being tubercular should be encouraged to submit to an immediate examination. No harm can come from a searching and thorough examination even though tuberculosis is not found to be present.

On the contrary, the patient is benefited either by removal of doubt or by knowledge that the disease is less difficult to cure in proportion to the earliness of its discovery and treatment. If tuberculosis is found in its very earliest stages, the patient is given what is perhaps the only opportunity which will ever present itself for permanent recovery from it.

LOCAL CLINICS.

One of the most important factors in the prevention and cure of tuberculosis is that of securing the earliest possible positive diagnosis. The most efficient and convenient method of accomplishing this is by the establishment of clinics in various parts of the province. These clinics need not be expensive or elaborate and should, where possible, be carried on in co-operation with the local hospital. They should consist of at least three rooms, and be supplied with the ordinary facilities for conducting first examinations.

These clinics should have the co-operation and assistance of the local medical practitioners of the district. By arranging the clinics at the local hospitals the services of its resident and visiting staff could be made available, together with the nursing organisation and other assisting diagnostic agencies. These clinics should be the headquarters of the public health activities of the community and a place where all local practicing physicians could avail themselves of the services of a travelling specialist in tuberculosis sent out from the sanatorium. The services of the clinics should be available free of charge to those who are unable to bear the expense of consulting their own physician. No medical treatment should be given to patients at the clinics, excepting what is absolutely necessary in the cases of patients who are unable to provide treatment for themselves through their family physicians. The specialists carrying on examinations should not be local practitioners, and during their visits to the clinics should not in any way interfere with the practicing local physicians.

These clinics should collect the necessary specimens for laboratory examination, and it would be the duty of the nurse-in-charge, to forward specimens to the central clinics for the area, and to communicate the results of laboratory tests to the local physician, thereby placing him in a position to render the necessary assistance to the patient.

The busy general practitioner is not usually qualified to detect tuberculosis in its early stages; at any rate, he is not nearly so well equipped for this purpose as the specialists who are engaged in this kind of work exclusively. The availability to the local practitioners of the advice of the specialist should be of infinite value to the community and would stimulate the interest of the local physicians in the searching out of tuberculosis.

The clinic could also assist in making arrangements where necessary, for treatment under the direction of the institution, suited to the individual cases requiring such assistance.

It should be the duty of the nurse-in-charge to see:

1. That all arrangements are made to admit the patient to the institution specified.
2. That the patient arrived in the institution at the time arranged for.
3. That they are fully provided with railway transportation and supplied with money to pay personal expenses while *en route*.
4. That the patients thoroughly understand how, and when, to reach their destination.
5. That the institutions to which patients are proceeding are fully informed as to their arrival, and all medical information available is forwarded so as to reach the sanatorium by the time the patient arrives.
6. That all possible assistance is rendered to the local physicians without partiality.
7. That during the visits of specialists, all preparations are made and undue delay in examination is avoided.

There should be no charge for services rendered at the clinics, and all physicians and social service organisations should be requested to co-operate in its activities.

CENTRAL CLINICS.

Central clinics should be located within reach of the laboratories of the Saskatchewan University, Saskatoon; the Provincial Government Laboratory, Regina; or the Saskatchewan Sanatorium, Fort Qu'Appelle, so that advantage may be taken of the facilities already in existence without further expenditure of capital. It is at these places only that the necessary bacteriological work can at present be done.

In addition to local clinical examinations, it should be the duty of these central clinics to arrange promptly for the completion of the examination or tests required by the local clinics, and to report to them the results of their investigations: and to co-operate in every way possible with the other units or officers of the association in the manner best calculated to render efficient service.

(For interesting reference to clinics see appendix.)

PRESENT SANATORIUM ACCOMMODATION INADEQUATE.

The present accommodation provided for the care of the known cases that should be receiving treatment, if anything like an effective effort is to be made to control tuberculosis, is entirely inadequate. The known condition of a large number of those that should be provided for is such that the period of treatment to be efficient will take a year or longer in each case. It will therefore be impossible with the present sanatorium, taking into account the additional number of beds that the hospitals will provide, on the ten per cent. basis, to handle this class of patients as it will not be possible to pass through the combined bed capacity more than six hundred per year. At this rate, a period of five years would be required to treat the known cases without allowance for the new cases of breakdown occurring during that time.

Until provision is made for the care of those who are active sources of infection, there will be no diminution of new cases.

(For resolutions recently passed by Saskatchewan Medical Association see appendix.)

IMMEDIATE SANATORIUM REQUIREMENTS.

Provision should be made as early as possible for the erection and equipment of two sanatoria. These institutions should be located at or near the centres of population. The advantage of such locations are:

1. Availability of already existing public utilities such as electric current, water, and perhaps, central heating. These services would be much cheaper when supplied from large plants than if supplied by the institution.
2. Accessibility by frequent railway service from the surrounding districts.
3. To facilitate visits to patients by relatives at little expense.
4. To exercise an educational influence by keeping the importance of anti-tuberculosis activities before the people.
5. Opportunity for close co-operation with many practising physicians in the centres of population.
6. The co-operation of social service organisations would be more easily obtained.
7. To cheapen the cost of operation by the short haul of supplies and proximity to wholesale stocks of necessary commodities.
8. The accessibility to sanatoria of existing bacteriological laboratories.

It would appear inadvisable to establish any sanatoria smaller than one hundred beds capacity, as it is impossible to operate a smaller institution effectively without increasing the maintenance expense above the average cost per patient that would be required in a sanatorium of this size.

On the other hand, it is questionable whether economic advantage can be gained by exceeding one hundred beds in a single institution as this is approximately the accommodation needed to serve the average centre of population in Saskatchewan. It would seem preferable to adhere to this size and establish sanatoria in the several places in which they would be most useful in educating the people and at the same time located as near as possible to the homes of the patients. Situated in this manner they would act as health centres so near to those requiring their service, that the friends and relatives of patients could visit them at frequent intervals with little expense and short railway journeys. This would be of great value in the education of the people, and of real benefit to the patients visited. At present, many patients delay in commencing treatment owing to their reluctance to travel so far from home to reach the sanatorium and to the necessity for long separation from their families. The sanatoria suggested should be self contained in every way, and capable of providing any treatment which might be necessary.

Patients offering themselves for treatment should be required to apply to the institution nearest to their homes where they would be placed under observation and would receive all hospital or infirmary care required in exactly the same manner as patients now entering the sanatorium at Fort Qu'Appelle.

After completing the necessary hospital treatment and having reached the stage in the cure that places them in the exercise class, they would, if there was room at Fort Qu'Appelle, be transferred to that place for further treatment in the section of the sanatorium fitted for the care of ambulant patients, and in which vocational training (consisting of commercial classes, wood-working, basket-making, and other forms of industry) would be undertaken during convalescence. If, during treatment as ambulant patients, a temporary setback should require short time bed care, this would be provided in the infirmary at that place, but should patients develop into prolonged hospital cases, they would be returned to the institution nearest to their home for further hospital care.

HOSPITALS AND TUBERCULOSIS.

There are thirty-seven hospitals operating in the province and receiving government aid under the provisions of the Saskatchewan Hospital Aid Act. One of the conditions to be complied with by hospitals desiring to avail themselves of government assistance is that they shall set aside 10 per cent. of their bed capacity for the use of tubercular patients. This provision has not been strictly adhered to. Upon investigation your Commission found only 32 tubercular patients in all the hospitals, although their combined bed capacity is one thousand six hundred and fourteen. In the larger

centres of population in which sittings of the Commission were held, the boards of hospitals in the vicinity had representatives in attendance, almost all of whom were opposed to the treatment of tuberculosis in their hospitals, some of them frankly stating that such patients were refused admission. While these representatives were almost unanimously opposed to the admission of tubercular patients to general hospitals, a friendly disposition was evinced to co-operate temporarily in making the anti-tuberculosis campaign effective, if by so doing hospital boards could be relieved in the near future of the problem presented by tubercular cases and if provision for tubercular patients was likely to be made in a series of specially designed sanatoria. Many of the hospitals are not provided with facilities suitable for the care of hopeful tubercular cases, and others are so small that they could not afford to maintain the special help necessary to care for the small number of patients which an allotment of ten per cent. of their beds to tubercular cases would represent. Taking into consideration all the information obtained in these interviews it must be concluded that all hospitals containing fifty or more beds should be required to reserve for the use of tubercular patients the accommodation it is intended that they should under the provision of the Hospital Aid Act. But this regulation ought to be enforced only until it is possible for the Saskatchewan Anti-Tuberculosis League to provide elsewhere the necessary facilities for the care of tubercular patients and then to relieve the general hospitals.

By requiring hospitals to care for advanced cases of tuberculosis up to the limit of ten (10) per cent. of their beds, the work of the Saskatchewan Sanatorium would be very materially assisted. The sanatorium would be enabled to accommodate a larger number of cases from unhospitalised areas than can be admitted under present conditions, and a large number of homes which are, under present conditions, compelled to care for spreaders of the disease would cease to be sources of infection. Under this arrangement all the equipment of the province would be used to the fullest extent, without the efficiency of the hospitals for other purposes being noticeably reduced. Hospitals treating tubercular patients should receive the same remuneration as is paid to the sanatorium in similar cases. The services and advice of the specialists in tuberculosis attached to the sanatorium should be at their disposal. It is recommended that specialists from the sanatorium should visit from time to time all the hospitals treating tuberculosis in order to afford them any assistance possible in the treatment of the patients and to encourage the adoption of improved methods.

As it is most desirable that tuberculosis clinics will be situated in the neighbourhood of, or will be established in connection with the general hospitals, these services could be rendered at the same time that the clinics are being visited.

PRESENT PUBLIC HEALTH NURSING SERVICE AND ITS IMPORTANCE IN TUBERCULOSIS.

The public health and school hygiene nursing service are two of the most important weapons now available for use in combating tuberculosis. The duties of these nurses bring them in close contact with the

homes which are most likely to be sources of infection and with the children attending public schools. They are in most instances the first to detect the disease, and are frequently able to give advice as to what should be done to combat it or to prevent its spread by infection. The visits of the school hygiene nurses to the schools, entailing personal examination of the children, are most important. It is during these examinations that the following important services are rendered:

1. Sub-standard children are visited in their homes, and their parents are consulted and advised as to improved methods of living.
2. Those who are diseased are singled out for examination and referred to the family physician.
3. The importance of cleanliness and fresh air in the home is emphasised.
4. Advice relative to general health is given where needed.

The "health talks" to children and teachers in the school are always well received and usually result in permanent benefit to the scholars.

In many schools where regular visits are made by the public health nurse, a marked, and in some cases, even an incredible improvement may be observed.

Children who formerly knew little or nothing about personal hygiene now take pride in the care of their teeth and the cleanliness of their bodies. This is of incalculable value because good health can not be expected or maintained if the ordinary precautions against disease are disregarded, and germ-laden dirt is allowed to accumulate in the home or on the person.

The teachers also are taught many things about health by the visiting nurses. They have explained to them the necessity of fresh air in the school, the importance of clean and orderly children in the class-room, and the value of healthful play in the open air. They are instructed in the reading of signs among their charges that convey a suspicion of tuberculosis, and what should be done in all suspected cases is explained to them, the urgency for prompt and energetic action being emphasised. The nurse also enquires from the teacher as to the cause of irregular attendance of pupils, and in cases of suspected illness visits the home to inquire the cause of absence and to examine conditions there for herself. The public health nurses are a direct connecting link between the children and the medical profession. They first suspect many of the early cases and induce the children to offer themselves for examination either by their own physicians or at one of the public health clinics. They also follow up the case after examination and arrange for the necessary treatment. The examination of representative groups of school children made by your Commission justifies the belief that upwards of 1,600 children attending our schools now require treatment for tuberculosis. The known presence of this menace to the children affected and the exposure of their class-mates to the disease by daily contact with them, should be ample justification for the further development of this nursing service. The public health nursing system in force in Manitoba appears to have many commendable features, and could with advantage be adapted to this province. The system there involves the voluntary employment of public health nurses. Each nursing district is formed by grouping together several municipalities so as to include about 1,000 school children. This service

is only supplied upon the request of a group of municipalities and after a demonstration of public health nursing covering a period of two weeks has been made. After a practical demonstration has been carried on for this length of time, the municipalities concerned may then arrange with the provincial board of health for a permanent service by agreeing to provide the necessary transportation for the nurse to carry her over the district, and the provincial government undertakes the supervision of the service and the payment of a portion of the cost. The expense in providing a public nursing service in Manitoba to cover a district of the size mentioned above is approximately \$2,000 per annum, and is apportioned between the government, the school districts and the municipalities within the nursing area.

In so far as tuberculosis is concerned, the object of the nurses visiting in health districts should be:

1. To promote good health habits among the people.
2. To spread knowledge concerning the cause and prevention of the disease.
3. To follow up and keep in constant touch with ex-patients who may require advice or further treatment. (All persons in the family where a death from tuberculosis has occurred are the special care of the public health nurse, and should receive the benefit of her visits at frequent intervals.)

(For further information regarding tuberculosis visiting nurses see appendix.)

POST GRADUATE COURSES FOR NURSES.

Every nurse engaged in public health nursing service, with special reference to tuberculosis, should have a post graduate course in this disease at a sanatorium for the treatment of curable tuberculosis. The present system of training nurses in general hospitals does not appear to be fair either to the nurse or those who are suffering with tuberculosis, as in the average hospital as now operated, and that are now training nurses, little or no knowledge of tuberculosis is acquired except in so far as it affects hopeless cases. There are very few, and in many hospitals, no cases in the incipient stages, and the knowledge acquired by a nurse in training encourages them in the belief that all cases of tuberculosis are similar to those advanced cases under treatment in the hospitals where she received her training. As this is very far from the fact, and as there is little danger as far as her personal health is concerned, while attending tuberculosis in a sanatorium, it would appear advisable to require all nurses to spend a certain portion of their training time in attending this disease. Contrary to common belief, the danger to the employees in a well-conducted sanatorium is no greater than it would be if they were engaged in other activities, as it is very rarely that any member of a sanatorium staff develops tuberculosis.

OPEN AIR SCHOOLS.

The under par child attending school is more liable to break down with tuberculosis disease than the one in good physical condition and is usually less active in play in the open air.

When it is remembered that a child spends more of its time with its books and in the company of its teacher than it does with its parents, it is realised how necessary good healthful surroundings during school time are.

The best way to bring back the underweight child to normal is to provide a sort of semi-sanatorium treatment in the school, where abundance of fresh air is admitted to the class-room and special diets and rest periods are provided.

All graded schools should have at least one room provided with large windows or balconies if possible with a south exposure, to insure sunlight. In this room all children apparently predisposed to disease or under weight, should be taught, and they should be required to take one hour of complete rest during both forenoon and afternoon school periods. In addition to this, a glass of good milk should be provided at each rest period. The milk should be furnished free by the school board to all the children who are unable to pay for it, and in the case of others it should be supplied at cost.

In Boston and Chicago it has been found that few children fail to pay for the milk consumed and the period required to restore the average under weight child to its normal weight is about three months.

There is little expense connected with this valuable service, and the results obtained are so satisfactory and far-reaching that it should be readily undertaken.

The present graded school as now constructed could easily have one room converted to this purpose by arranging for open windows and providing the children in the room with the necessary cots for resting purposes.

All schools to be erected in future should make provision for this class of preventative care to be given to those who may need it.

Objection to the teaching of pupils in the ungraded open air class room is unwarranted. The results obtained have shown that underweight children undergoing this class of teaching are usually able to maintain their class standing with less effort than when taught in the usual way. After all it is more important that the child should have good health even with less education than to have education without the physical ability to take their places in the affairs of the community.

At the Saskatchewan Sanatorium it has been noticed that the individual attention given by the teacher to the child while undergoing treatment has in most cases enabled them to retain their places in their classes when they return to their own school.

This is the more remarkable when we remember that the children taught in the sanatorium school have all broken down with tuberculosis and are much more difficult to deal with than the child who is only on the way to the breakdown.

Healthy children is the material from which healthy nations are made; by safeguarding them we are building for the future.

COST OF TREATMENT AND PRESENT PROVISION FOR SAME.

The only time to treat tuberculosis successfully is during the earliest stage: in the later stages it takes double the time to arrest the disease, and as a consequence the results are not nearly so satisfactory or permanent.

The greatest obstacle to early treatment is the difficulty the majority of patients have in providing for the cost of their care. Unfortunately a large number of our citizens when suffering from this disease, refuse to apply for charity until compelled to discontinue work of any kind and to remain in bed. Others who try to pay for the cost of their own treatment find that owing to the length of time during which they must receive treatment, it is impossible to do so. Only about twenty-five (25) per cent. of those treated are in a financial position to pay the expense of treatment themselves. By far the majority of cases occur among those who during good health are unable to earn much more than sufficient for the support of themselves and family, and who, during illness, have little or no income. They are usually dependent entirely on their earning ability from month to month in the case of wage earners, or from year to year in the case of farmers. As tuberculosis is unlike other serious accidents or diseases in outward appearances when first attacking its victim, it is allowed to creep on almost unnoticed and without compelling the one affected to cease work immediately.

The only warning the patient appears to receive is a slight decrease in physical energy, hardly noticed at first, but gradually becoming more and more apparent with the passage of time, until it is realised that the person attacked has been challenged by mankind's most active death-dealing enemy, and must put up a fight for life, with the odds against the patient. When this condition is realised, the first question to arise is: how is the cost of treatment to be provided? It is at once apparent that the patient must cease his ordinary occupation and suffer the consequent curtailment of income. Turn where he may it requires more than he can provide to pay the cost of treatment. There are, however, only three alternatives open to him to choose from:

First—To pay the cost of treatment with a chance to recover.

Second—To pay the cost of care at home, with far less chance of satisfactory results, and greatly increasing the danger of infection to other members of his family.

Third—To continue to postpone treatment from week to week, until the disease has become so advanced that no treatment can result in anything but the same ending as has come to hundreds of our people who have gone before.

The system in force in Saskatchewan, for providing treatment for those unable to do so for themselves, is perhaps as good as that prevalent in many other places, but much requires to be done to make it possible for the average person overtaken by tuberculosis to have a chance to live. It is easy to imagine the agony of mind that must be expressed when a person first confronted with the seriousness of tuberculosis, is compelled to decide whether he will apply to his municipality for charity, such charity being usually delayed as long as possible, and often secured by mortgages on personal belongings, assignments of life insurance, and other forms of security, thereby placing the unfortunate one under lifelong obligations to repay the outlay regardless of the condition of the home from which the patient comes, or the wants of an already stricken family.

Some plan should surely be devised whereby this condition of affairs should be remedied.

PROBLEM OF FINANCING PRESENT ANTI-TUBERCULOSIS WORK.

The problem of financing the future activities of anti-tuberculosis work in Saskatchewan is no light one to undertake and must be approached with every caution and effort towards economy.

The experience of the Saskatchewan Sanatorium justifies the belief that no material decrease will be observed in future over what has been found to be the actual cost during the five years of treatment experienced at that institution. The average cost per day per patient has been \$3.35 during 1921, and up to the present it has been \$3.15 for 1922. It would appear after a study of what may be expected in the future that this former sum will be about what will have to be provided if the present standard of treatment is to be maintained. During the past year a reduction of cost has occurred amounting to twenty cents per day per patient, but when it is remembered that this sum has been expended almost entirely in attempts to cure those already advanced in the disease, and practically nothing has been done to prevent the spread and development of it outside of the sanatorium, it is reasonable to estimate that there will be no noticeable reduction below this amount, if the necessary preventative and follow-up work is undertaken.

Prevention of breakdown is much easier and cheaper to deal with than treatment after the breakdown occurs. So long as treatment only is undertaken there will be the inevitable number of advancing cases coming up that must receive care later, and the continual sowing of new seed among those not yet infected. It is therefore apparent that extended activities of anti-tuberculosis work must be undertaken if a successful fight is to be carried on. The difficulties of financing an institution such as the Saskatchewan Sanatorium are many, and are increasingly hard to overcome. When the sanatorium was treating 200 patients there were 150 returned soldiers whose expenses were entirely paid for by the Dominion government, and 50 civilian patients were receiving treatment; out of this number 35 were not paying their own expenses.

The provincial government has made no distinction between soldiers and civilians treated and has paid the hospital grant of 50 cents per day in all cases. Thus it will be observed that about \$75.00 per day over and above the cost of treatment given to returned soldiers was available to assist in defraying the expense of treating the civilians and it was not so much a matter of concern whether all the patients paid for treatment or not under those conditions.

At the present there are only 60 returned soldiers undergoing treatment at the sanatorium who are being paid for by the Dominion government, consequently \$30.00 per day is all that is available from the hospital grant on this account, while the number of civilian patients who are unable to pay their own expenses has increased to over 150. As a consequence, the sanatorium management has been compelled to require municipal guarantees from the municipalities whose residents are in need of treatment. Unfortunately, many of the municipalities

find it increasingly difficult to continue to provide funds for this purpose and at the present there is owing on such accounts almost \$20,000, which if collected at the present time from the municipalities, would in many cases, be a great hardship to them.

From the standpoint of the sanatorium it is a serious situation, as the Saskatchewan Anti-Tuberculosis League as managers of the sanatorium, have never asked more than \$2.50 per day per patient. This sum with the hospital grant for last year was 35 cents less than actual cost. This has always been a large amount to be made up by subscription solicited from private individuals; it can, however, be obtained in this way, but it must not be forgotten that in addition to the 35 cents per patient per day there are a great many patients that find their way into the sanatorium who have neither friends or money and for whose treatment the sanatorium receive no payment. The responsibility for these patients cannot be fixed so as to reimburse the sanatorium for the money expended. Added to these difficulties is the fact that large stocks of supplies for carrying on the work of the sanatorium must be secured and paid for before treatment is commenced.

The hospital grant earned is only paid once in six months; all ex-soldier patients are treated for one month before payment is made. Civilian patients whose accounts are guaranteed by municipalities are also treated one month before payment is requested. In order to carry on and provide the necessary funds for these requirements large sums must be borrowed. The Anti-Tuberculosis League finds itself continually confronted with heavy interest charges by the bank for this borrowed money and are unable to take advantage of cash discounts on bills of goods purchased. This results in a greatly increased expense to the sanatorium and amounts to approximately \$10,000 per year. This sum would greatly assist the work of the league, and some means should be devised to place the finances of the organisation on a more satisfactory basis.

EDUCATIONAL ADVANTAGE OF VOLUNTARY CONTRIBUTIONS BY PRIVATE INDIVIDUALS TO ANTI-TUBERCULOSIS WORK.

The great problem of financing the cost of the necessary sanatoria and to provide for the cost of treatment for those requiring it, is difficult to solve. Added to this is the expense of the most important phase of the work in so far as the future is concerned, i.e. prevention.

The work of all tuberculosis organisations has, in the past, been largely confined to efforts to cure, and the earlier cases have been allowed to develop into spreaders of the disease before treatment was commenced. This condition has remained because the people have only had the charitable aspect of tuberculosis presented to them and have not been educated to the necessity for early precautions against the disease.

Since the earliest attempts to combat tuberculosis were undertaken, the advanced case with its attendant poverty and pain, has been constantly held up to the view of private individuals in the hope that their

sympathy would be aroused to a sufficient degree to induce a contribution to the funds of the organisation carrying on the work. The necessities of a successful fight against tuberculosis requires more than this. The responsibilities of governments, federal, provincial and municipal, must be undertaken in their proportion, and in addition to this the individual should be made to feel that he also has a personal responsibility that must be undertaken. He owes the assistance he is capable of rendering to his less fortunate fellow citizens, not only for the sake of sharing his providentially endowed physical fitness with those overtaken with this disease, but as a measure of self defence for himself and his family against the infection they are liable to receive from the open cases with whom they come in contact.

Many people who are unfamiliar with the necessities of a successful fight against tuberculosis are of the opinion that the whole cost of anti-tuberculosis work should be undertaken by the government and paid for by a general tax on the whole province. This would be very easy for the management of the organisation carrying on the work, but in the opinion of your commission it would be disastrous to the results obtained. In several places where the sole financial responsibility in connection with the cost of treatment has been undertaken by the government many of the necessary elements which assist so much in the work have entirely disappeared. The individual responsibility of the people has been placed directly on the government, and the tuberculosis sanatorium is looked upon in much the same manner as other public institutions, and the people take it for granted that there is nothing left for them to do. All the educational advantages of campaigns for money to carry on are lost. Sums of money voted to this work by governments should provide for the most of the cost connected with it, but a considerable sum must be provided through private contributions solicited through organisations from the individual. In this way only can the danger of tuberculosis be repeated over and over again, until those who have given the matter very little thought are brought to realise the actual cruelty of the disease and are enlisted in the army of anti-tuberculosis workers. Money contributed to this work by governments in lump sums is necessary for capital expenditure and a large proportion of the cost of treatment should also be provided in this way. It can however never be looked upon as having had anything like the educational value that accompanies similar sums from private contributors.

All individuals either personally or as members of organisations should be encouraged to give serious consideration to anti-tuberculosis work and lend their assistance to prevent waste of human life, much of which is preventable and curable when taken in time. Every effort should be made to develop voluntary work along this line and nothing should be undertaken by the government that can be as well done by the private individual or organisation. Insofar as the members of the Anti-Tuberculosis League of Saskatchewan are concerned, they are rendering voluntary services to the sufferers with tuberculosis that could not be purchased with money. The league should be furnished with the necessary funds to supply the buildings and equipment to carry on this work and to provide the treatment required to those who will benefit by it.

RESULTS OBTAINED ELSEWHERE.

Compared with other provinces in the Dominion, the problem of tuberculosis in Saskatchewan would appear to be no greater, and in many cases less, than in the rest of Canada. The death rate from this disease for the whole Dominion is approximately 100 per 100,000 of the population. The death rate in the province for 1921 is 41 per 100,000. Ontario is better equipped to fight tuberculosis than any other province in Canada insofar as clinics and sanatoria are concerned, and as a result the deaths from this cause have been reduced from 102 per 100,000 to 78 in the last nine years. Framingham in Massachusetts, a typical American community, has given the most intensified demonstration of what can be done to cure and prevent tuberculosis. During the past six years the death rate has been reduced from 121 per 100,000 to 40 per 100,000.

As stated by Dr. Livingston Farrand in commenting upon these figures, "the logic of the situation is unavoidable."

"The Framingham Health and Tuberculosis demonstration has clearly shown that where intensive methods of work are applied, the death rate from tuberculosis can be reduced to a nominal minimum. There is every reason to believe that the present low rate will be brought down further by continued effort."

Since the Chicago Municipal Tuberculosis Organisation began its energetic campaign seven years ago, the deaths occurring as a result of tuberculosis have been reduced from 4,200 to 2,500 a year. In Hamilton, Ontario, because of the energetic efforts of the Anti-Tuberculosis Organisation, the number of deaths caused by this disease is no greater than it was ten years ago although the population of the city has more than doubled.

Unfortunate as the loss of 311 of our people each year is, it becomes doubly so when it is realised that by far the greater part of it can be prevented if the tried and proven methods of eradication of this disease are energetically applied.

It is an established fact that sanatoria with sufficient accommodation to provide treatment for those in need of it, assisted by the proper organisations of nurses, doctors, clinics, health centres, and all the other anti-tuberculosis agencies, can materially reduce this waste. When one considers the happiness of our people and the contentment of mind consequent upon the absence of tuberculosis, together with the ultimate saving of thousands of lives, the provision of these agencies must be worth while.

The cost of providing the necessary equipment and operating charges would be about \$750,000.00 a year. The money invested however will surely bring handsome returns. Already we have evidence in this province of what can be expected, as during the year 1918, 140 patients were treated in the sanatorium at Fort Qu'Appelle at a cost of \$76,750.00. By following up these patients since discharge it has been found that 79 who are engaged in ordinary occupation have collectively earned some \$66,900.00 in each of the years 1920 and 1921.

It will be seen from this that 79 of the patients treated were able to produce each year almost the total cost of treating all the 140 patients. These patients are still earning and will likely continue to do so for many years.

Your commission feel quite safe in stating that, without sanatoria, a large percentage of these patients, if they were still living, would be charges upon the cash capital of the province instead of as at present making their contribution to it.

To date, July, 1922, 1,952 patients have received treatment at the sanatorium, and as far as it has been possible to ascertain, 50 per cent. of those discharged are now following ordinary occupations.

A serious phase of the situation is that of 311 deaths from tuberculosis in 1921, approximately 250 took place at home. These patients were in all cases in close contact with members of their families, and in a great many cases growing children were in daily contact with the infection. Many of those who died had little or no knowledge of the danger of spreading infection and had no training in precautionary measures. The danger of allowing such spreaders of infection to come in contact with healthy persons, especially children, cannot be overestimated. It is necessary that provision be made to provide treatment for them under conditions that would make further spreading of the disease impossible. It is agreed by authorities on tuberculosis that for every death occurring in a given area, nine active cases are left behind.

SUMMARY OF FINDINGS OF THE COMMISSION IN REGARD TO TUBERCULOSIS.

1. The test for the presence of tubercular infection carried out by your commission has shown that our people are widely infected with the germ of tuberculosis.

Forty-four per cent. of our school children on entering our public schools at the age of six years are infected.

Sixty per cent. of our children on leaving these schools at the age of fourteen years are infected.

Seventy-six per cent. of a group of normal school students at an average age of 18 years were found to be infected.

The Indian children attending Indian schools were found to be infected by tuberculosis to nearly double the amount found among the white children of similar ages attending the public schools.

2. Very definite sources of infection exist which can be lessened and in some cases eliminated.

(a) HUMAN—

One per cent. of children attending schools are suffering from active tuberculosis.

Ten per cent. of children attending school have been at some time exposed to active cases of tuberculosis in their homes.

250 persons died in their homes, in Saskatchewan last year, from tuberculosis.

(b) BOVINE—

18.3% of the cattle tested reacted positive to tuberculosis in areas where raw milk was being consumed. Infection from milk is known to cause one case in every four of tuberculosis among children.

3. The information available regarding the amount of active tuberculosis disease among our people shows that the disease is prevalent:

- (a) By an examination of 1,572 public school and normal school pupils, age 6-18 years, it was found that nearly one per cent. (.84%) were suffering from active disease.
- (b) The number of active cases found among the Indian children attending the Indian schools was double that found in the white schools.
- (c) The Military Draft Board in Saskatchewan in 1918 from examination of 17,436 of our male population, age 18 to 45, rejected nearly two per cent. (1.9%), because of evidence of pulmonary tuberculosis.
- (d) The physicians of the province reported to the commission on November 15, 1921, 1,625 cases of active tuberculosis under their care.

4. Debilitating causes and pathological conditions are prevalent among our school children which would tend to develop hidden tuberculosis infection into manifest tuberculosis disease.

- (a) Forty-seven per cent. of the children examined had decaying permanent teeth.
- (b) Twenty-five per cent. of the children examined had diseased tonsils.
- (c) Eighteen per cent. of the children examined had excessive adenoid tissue.
- (d) Eleven per cent. of the children examined were noticeably and actually under-nourished.
- (e) Nine per cent. of the children examined were living in bad housing conditions.
- (f) Fifty-one per cent. of the children examined had suffered from predisposing infectious disease at an average age of eleven years.

5. Tuberculosis is the cause of great poverty as evidenced by the families in Saskatchewan who are receiving aid under the mothers' pension act.

- (a) The husbands of fifty-seven mothers receiving assistance under the Act died of tuberculosis.
- (b) One hundred and forty-three deaths have occurred in the families of these mothers.
- (c) There are at present sixty-three active cases in these families.
- (d) Twenty-seven children of these mothers are at present suffering with tuberculosis.
- (e) Twelve of the mothers receiving pensions are themselves tuberculous.

6. There is at present a great lack of facilities for the diagnosis of this disease in its earlier stages. Only one organised clinic outside of the sanatorium at Fort Qu'Appelle exists in the province to assist in the diagnosis of tuberculosis, i.e. Regina tuberculosis clinic.

Sixty-eight point three per cent. of the patients referred for treatment to the sanatorium up to December 31, 1921, were already in the advanced stages of the disease and had lost their chance for complete cure.

7. The great obstacles in the way to prevent early treatment are:

- (a) Failure to be convinced that tuberculosis is present and that treatment is needed, until the disease is advanced.
- (b) Inability of a majority of patients to pay the cost of their treatment, and their refusal to ask for municipal assistance.
- (c) Lack of sanatorium accommodation for the treatment of these patients.

8. The present accommodation for the treatment of tuberculosis at the Saskatchewan Sanatorium is entirely inadequate to accommodate those sufferers requiring treatment in the province. On November 15,

1921, at a time when the sanatorium was full to capacity and a large waiting list outstanding, a *questionnaire* sent to the physicians of the province revealed the fact that 1,625 patients were receiving treatment in their homes. Of these 200 had already passed into the hopeless stages.

9. An analysis of the condition of patients on discharge from the Saskatchewan Sanatorium for the past four years shows that for reasons economic and otherwise, 57.5 per cent. have left the institution before the disease was even apparently arrested. In the case of the civilian patients, the period of treatment was all too short, many of them receiving little more than a slight sanatorium training before leaving. Following discharge from the sanatorium the ex-soldier patients received after care, including periodical visits by social service nurses, constant attention from their family physicians and interval examination and advice through the pensions department of the Department of Soldiers' Re-establishment. No corresponding after care is available for the civilian patients after leaving the sanatorium apart from that obtained from their family physicians, as up to the present, anti-tuberculosis organisations have been unable to provide this. The improvement gained in the institution has in many ways been lost because the support of after care was lacking.

Such follow-up work as is supplied by the Department of Soldiers' Re-establishment would not only lessen the number of failures to continue the treatment at home, but would also greatly lessen the number of relapses among apparently cured cases.

10. During 1920 and 1921, 56 mothers received treatment in the sanatorium at Fort Qu'Appelle either during pregnancy or following confinement. There is as yet no place in the province where the non-tubercular children of tuberculous parents can be cared for apart from their homes.

11. Over 75 per cent. of the patients who apply for treatment are unable to pay the cost of it themselves.

12. The vast majority of persons needing treatment who are unable to pay the cost of it refuse to apply to the municipality for assistance until they are entirely incapacitated and compelled to discontinue their ordinary occupations, and only after the disease has reached the advanced stages. The time required to treat such patients is greatly lengthened. The cost is greatly multiplied. The opportunity for complete cure is lost and all that can be expected for this class of patient is a prolongation of life.

Because of the length of time a patient in the advanced stage of tuberculosis occupies a bed in the sanatorium compared with the short time required to treat one in the early stage, the number of persons treated at the sanatorium is reduced far below the number that could be cared for if the patients could be induced to commence treatment while the disease is in the incipient stage.

13. General hospital boards are opposed to the acceptance of tuberculous patients and generally endeavour to prevent them from being admitted for treatment to their hospitals. They are, however, willing

to temporarily assist in caring for tubercular patients if they can be assured that within a reasonable time they will be relieved from this class of disease, and that provision will be made for treatment of tuberculosis in specially designed and equipped sanatoria.

MOST URGENT REQUIREMENTS.

It is not to be expected that a complete organisation with the necessary equipment can be immediately provided. This can only be accomplished satisfactorily if a programme of construction and development be undertaken that will provide against possible mistakes and to insure the furnishing of facilities in proper sequence to make the best use of the capital expended. The most pressing needs are:

First—Hospital and sanatorium accommodation to care for those who are spreaders of the disease.

Second—Provision for the care of children from the homes where open tuberculosis is found.

Third—Improve present system of financing the cost of treatment so as to enable all sufferers who need treatment to obtain it with the least delay.

Fourth—Improve present diagnostic facilities and extend them to all parts of the province.

Fifth—Extend a nursing service and follow-up work to all ex-tubercular patients.

After these important facilities are supplied, introduce as many as possible of the recommendations of this report at as early date as possible.

Build and equip one sanatorium during 1923 and another in 1924. The estimated cost of each sanatorium, with the necessary equipment including medical superintendent's residence, homes for nurses and orderlies, and the furnishings, would be about \$300,000.00.

In order to fully prepare the sanatorium at Fort Qu'Appelle to handle the larger number of patients furnished to it for treatment by the two new sanatoria, additional buildings and equipment, as well as some minor changes should be immediately undertaken at that institution. The estimated cost of this work is \$75,000.00.

So soon as the above recommendations are complete there will be 500 beds available for the care of tuberculous patients. Going on the assumption that the cost of treatment will remain at about three dollars and thirty-five cents (\$3.35) per day per patient, the expense to be undertaken would be approximately as follows:

FOR THE YEAR 1923.

CAPITAL EXPENDITURES—

For one 100 bed sanatorium with all necessary buildings and equipment	\$300,000.00
New buildings and alterations at Fort Qu'Appelle.....	75,000.00
	\$375,000.00

MAINTENANCE AND OPERATING ACCOUNTS—

To provide for non-paying patients at Fort Qu'Appelle..	\$215,231.00
Stock of supplies for new sanatorium.....	25,000.00
Cost of 50 non-paying patients for two months in the new sanatorium.....	10,050.00
Liquidate present bank overdraft.....	70,000.00
	\$320,281.00
	\$695,281.00

FOR THE YEAR 1924.

CAPITAL EXPENDITURES—

For one 100 bed sanatorium with all necessary buildings and equipment	\$300,000.00
Clinics and equipment for outside services.....	15,000.00
Planting and grading sanatorium grounds, constructing roads and sidewalks at Fort Qu'Appelle and Sanatorium No. 1.....	7,000.00
	\$322,000.00

MAINTENANCE AND OPERATING ACCOUNTS—

To provide treatment for 250 non-paying patients.....	\$305,688.00
Stock of supplies for new sanatorium.....	25,000.00
Cost of 50 non-paying patients for two months in new sanatorium	10,050.00
Salary and expenses of two specialists and six nurses for outside work.....	20,000.00
	360,738.00
	\$682,738.00

The annual expense of operating the three sanatoria will approximate \$611,375. Of this sum about \$61,137 will be provided by the Dominion government for the treatment of 50 ex-soldiers.

One hundred and thirty-five thousand, nine hundred and forty-eight (135,948) dollars will be paid by civilian patients who are in a position to provide for themselves. These sums aggregating \$198,085, leave \$413,290 to be provided from other sources. If the present rate of hospital grant is continued, \$91,250 will be available from that source. This will reduce the gross amount required to the sum of \$322,040 per year when the full organisation will be in operation.

It is impossible to say exactly how many ex-soldiers will be undergoing treatment in years to come. If the number falls below 50 the annual cost of operating the whole organisation will increase in direct proportion to the number of non-paying civilian patients admitted.

It cannot be expected that private subscriptions will yield anything like this amount; it is therefore apparent that it will be necessary to apportion it in some equitable manner among the municipalities of Saskatchewan, the provincial treasury, and the private individuals who are willing to contribute.

In the above calculations it has been assumed that all of the 500 beds will be fully occupied throughout the entire year. As this is impracticable, an allowance should be made for a deduction of about 10 per cent. in all classes of calculations, as a reduction of this amount will likely bear a true proportion in relation to all classes of patients.

Your Commission strongly recommends the supplying of the sanatoria and equipment mentioned, and that all financial obstacles in the way to prevent treatment be removed.

SUMMARY OF RECOMMENDATIONS.

1. Provide suitable accommodation and treatment for those with open disease. For this need, two additional sanatoria with accommodation for 100 patients each are required.

2. Require complete disinfection of houses from which open cases have been removed.

3. Compel complete ventilation of theatres and public halls.

4. Provide meat inspection at all abattoirs and slaughter houses.

5. Provide adequate laws to enable treatment being given to those who are unable to provide this for themselves, and to define the exact proportion of responsibility that should be borne by the province, as well as the municipality, in which indigents reside.

6. Make tuberculosis a quarantinable disease as soon as the necessary accommodation for spreaders of infection has been provided, the quarantine to be applied only when a patient fails to co-operate with the family physician or public health department in carrying out necessary curative or hygiene measures.

7. Make provision to prevent children from coming in contact with the open cases in their homes in order to avoid infection.

8. Provide suitable preventative care for children from the homes where open cases are found.

9. Arrange for the testing of all cows supplying milk to children and for the establishment of accredited herd areas so as to encourage individual accredited herds.

10. Give special instruction to our teachers during normal school training so that they will be thoroughly informed as to the prevention of tuberculosis, the early symptoms of the disease, and the steps to be taken when suspected cases appear in the schools.

11. Examine all school children in order to eliminate sources of infection in the school and to discover causes that would predispose to breakdown.

12. Extend as far as practicable a nursing service co-operating with family physicians, health officers, and tuberculosis clinics to all schools in the province. Where possible doctors and dentists should be employed.

13. Make provision for open air rooms in graded schools, and in case of future construction insist on same.

14. Arrange for special rest periods and supplementary milk diets for school children physically below par.

15. Require all hospitals of 50 or more beds to provide ten (10) per cent. of their beds for advanced tuberculosis patients until suitable provision can be made by the Anti-Tuberculosis League.

16. Set aside a period of teaching time in the schools for health education with special reference to tuberculosis.

17. Press federal authorities to make complete survey of Indian population and arrange for special provisions to be adopted to prevent tuberculosis among them.

18. Also press for drastic measures to be taken to eradicate tuberculosis from the herds supplying milk for children attending Indian schools.

19. Provide nurses to visit open cases and local clinics where examinations of suspects may be made.

20. Provide suitable laboratory equipment to make bacteriological examinations.

21. Induce all training schools for nurses to affiliate with the sanatorium so as to provide tuberculosis training as part of their undergraduate course.

22. Provide post graduate courses for physicians who desire special tuberculosis training.

23. Prevent persons from handling food in open packages unless in possession of certificates of good health.

24. Enforce compulsory reporting law re tuberculosis as soon as suitable facilities for treatment are provided.

25. Provide trained specialists in tuberculosis to assist in the clinic examinations.

26. Provision should be made at various centres in the province for clinics, manned by specialists, to which suspected cases could be referred by their physicians for diagnosis.

27. Provide for the services of a travelling chest expert to assist physicians in outlying districts where the establishment of clinics would not be justified.

28. Arrange for follow-up care for patients treated in the sanatorium including visits from nurses and re-examination of patients when necessary.

29. Make provision for the care of healthy children while their mothers are undergoing treatment for tuberculosis.

30. Take every precaution against the possibility of meat from tuberculous animals being offered for sale.

A. B. COOK, *Chairman.*

R. G. FERGUSON.

J. F. CAIRNS.

APPENDICES

TABLE No. I

Showing reaction by age and nationality.

	English		Irish		Scotch		German		Rou- manian		Austrian		Ameri- can		Welsh		Russian		French		Norwe- gian		N. A. Indians		Others		Total examined	Total positive	Per cent. positive	
	P.	N.	P.	N.	P.	N.	P.	N.	P.	N.	P.	N.	P.	N.	P.	N.	P.	N.	P.	N.	P.	N.	P.	N.	P.	N.				
5 years	...	3	...	3	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	8	2	25.	
6 years	6	13	3	3	2	2	1	1	2	1	2	...	...	...	...	...	...	...	...	...	...	...	2	2	...	1	45	20	44.4	
7 years	15	22	3	5	5	9	2	2	...	...	...	...	1	...	...	...	...	...	...	...	...	...	12	3	...	...	82	38	46.3	
8 years	15	26	5	10	2	10	2	1	2	...	...	...	1	...	...	...	...	...	2	1	...	...	18	3	...	1	104	51	49.	
9 years	33	28	15	7	21	9	3	4	3	2	2	...	...	...	...	...	...	...	...	...	1	...	16	1	...	1	152	98	64.4	
10 years	45	52	22	8	17	19	4	6	4	...	...	...	2	...	...	...	...	...	1	1	2	...	22	1	...	3	219	122	55.7	
11 years	36	60	9	15	27	10	10	4	5	1	2	2	3	3	2	...	...	...	...	...	1	...	17	1	...	1	221	120	54.3	
12 years	62	40	19	10	15	16	4	6	2	2	2	1	...	...	1	...	...	...	...	...	...	...	11	...	...	4	199	119	59.3	
13 years	33	28	8	8	18	10	1	3	3	2	4	1	1	3	...	...	...	...	...	...	1	1	18	...	...	2	150	90	60.	
14 years	18	18	13	1	6	4	1	1	...	...	...	1	1	3	...	...	...	...	...	...	...	...	9	1	...	1	82	50	60.9	
15 years	9	4	2	6	2	1	...	...	...	...	...	1	1	1	...	...	...	...	...	...	...	8	...	...	...	40	25	52.5		
Over 15 years	2	7	3	3	4	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	17	...	...	2	44	28	63.6		
Total examined	274	301	102	79	120	93	28	29	21	7	18	6	10	17	4	4	2	12	12	4	6	3	4	150	12	17	15	1,346	763	
Per cent. positive	47.6		56.3		56.3		49.1		75.		75.		37.		66.6		50.		40.		42.8		92.5		53.1			56.6		

WEIGHT

(Variation from normal weight and its relation to infection).

TABLE No. II

	1.	2.	3.	4.	5.	6.	7.
	Normal or above	1 to 5 pounds below	5 to 10 pounds below	5 to 10 pounds below and noticeably undernourished	More than 10 pounds below and noticeably undernourished	More than 10 pounds below	Total
Male positive	107	119	51	24	28	20	349
Male negative	64	90	38	6	24	20	242
Female positive	125	107	79	25	56	22	414
Female negative	73	112	79	28	40	9	341
Total	369	428	247	83	148	71	1,346
Percentage	27.4	31.7	19.	6.1	10.9	5.2	

NOTE.—More than 5 pounds below normal weight and noticeably undernourished on physical examination 11.3%.

TABLE No. IV
Showing the prevalence of diseased teeth and the relation of diseased teeth to tuberculosis infection among the group of normal school students examined.

	Prophylaxis			Caries		Abscess		Malocclusion		Total
	Good	Fair	Bad	Yes	No	Yes	No	Yes	No	
Male positive	14	11	4	17	12	5	24	3	26	29
Male negative	6	2	2	9	1	3	7	1	9	10
Female positive	86	41	16	77	66	25	118	17	126	143
Female negative	22	13	9	23	21	6	38	5	39	44
Total	128	67	31	126	100	39	187	26	200	266
Per cent. of total examined	56.6	29.6	13.7	54.8	44.2	17.2	82.7	4.5	88.4	

TABLE NO. V

Showing the prevalence of diseased tonsils and excessive adenoid tissue, also the relation of these conditions to tuberculosis infection among the group of school children examined.

	Tonsils						Adenoids					
	N.	%	H.	%	D.	%	Total	N.	%	E.	%	Total
Male positive	178	51.	72	20.6	99	28.3	349	277	70.3	72	20.6	349
Male negative	121	50.	55	23.1	66	27.2	242	200	82.6	42	15.9	242
Female positive	233	56.2	88	21.2	93	22.4	414	351	35.8	63	32.9	414
Female negative	176	51.5	82	24.	83	24.3	341	283	25.	58	22.7	341
Total	708	52.6	297	21.3	341	25.3	1,346	1,111	71.2	235	18.8	1,346
Total positive	411		160		192		763	628		135		763
Per cent. positive	58.		53.8		57.2		56.6	56.5		57.4		56.6

NOTE.—*Tonsils*—N.—Normal; H.—Hypertrophied; D.—Diseased.
Adenoids—N.—Normal; E.—Excessive.

TABLE No. VI

Showing the prevalence of diseased tonsils and excessive adenoid tissue, also the relation of these conditions to tuberculosis among the group of normal school pupils examined.

	Tonsils				Adenoids			
	N.	%	H.	%	D.	%	N.	%
Male positive	21	72.4	2	6.8	6	20.	18	37.9
Male negative	7	70.	....	....	3	30.	5	50.
Female positive	90	62.9	13	9	40	27.9	109	27.7
Female negative	29	65.9	4	9.	11	25.	35	92.4
Total	147	65.	19	8.4	40	26.5	167	26.1
Total positive	111	75.5	15	78.9	46	76.6	127	76.
Per cent. positive								76.2
								172

NOTE.—*Tonsils*—N.—Normal; H.—Hypertrophied; D.—Diseased.
Adenoids—N.—Normal; E.—Excessive.

TABLE No. VII

Showing the incidence of tubercular infection among the normal school pupils in relation to their place of birth.

	Saskatchewan	Canada	British Isles	United States	Other European countries	Total
Male positive	10	12	2	5	....	29
Male negative	3	6	1	1	....	11
Female positive	49	52	5	28	8	142
Female negative	18	13	1	10	2	44
Total	80	83	9	44	10	226
Per cent. of total examined	35.3	36.7	3.9	19.4	4.4	
Total positive	59	64	7	33	8	171
Per cent. positive	73.7	77.1	77.7	75.	80.	75.6

DEATHS FROM TUBERCULOSIS IN SASKATCHEWAN
RECORDING VARIETY. 1917, 1918, 1919, 1920 and 1921.

TABLE No. VIII

Year	Pulmonary	T.B. Menin.	Acute Miliary	T. B. other organs	Total
1917	236	23	5	31	295
1918	323	20	10	41	394
1919	212	22	1	43	278
1920	285	19	6	38	348
1921	243	20	13	35	311
Total	1,299	104	35	188	1,626

NOTE.—“T.B. of other organs” included “abdominal T.B.,” “disseminated T.B.,”
“white swelling,” “Pott’s disease.”

DEATHS FROM TUBERCULOSIS IN SASKATCHEWAN BY
AGE PERIODS. 1918, 1919, 1920, 1921.

TABLE No. IX

Period	1918 No.	1919 No.	1920 No.	1921 No.	Total
Under 1 year	11	12	10	8	41
1 to 5 years	23	26	15	20	84
6 to 9 years	19	9	10	5	43
10 to 14 years	18	12	19	17	66
15 to 19 years	47	24	43	25	139
20 to 29 years	109	76	94	86	365
30 to 39 years	77	55	84	67	283
40 to 49 years	43	23	39	38	143
50 to 59 years	30	29	17	25	101
60 to 69 years	11	9	8	13	41
70 to 79 years	4	3	8	6	21
80 and over	1	....	....	1	2
Age not stated	1	....	1	....	2
Total	394	278	348	311	1,331

TABLE No. X

Showing prevalence of elevated temperature and the relation between temperature and tuberculin reaction, by age, among the group of school children examined.

Age	98.6					98.6 - 99.2					99.2 - 99.6					99.6 - 100					Total				
	Positive		Negative		Total	%	Positive		Negative		Total	%	Positive		Negative		Total	%							
	M.	F.	M.	F.			M.	F.	M.	F.			M.	F.	M.	F.			M.	F.		M.	F.		
5 years	...	...	1	...	1	12.5	...	...	...	...	...	...	...	1	...	...	...	...	...	...	62.5				
6 years	1	...	...	...	1	2.2	...	...	...	...	...	25.	...	...	...	...	...	...	...	...	48.8				
7 years	1	1	...	...	2	2.4	...	...	...	...	...	46.8	...	...	...	...	...	...	...	...	50.				
8 years	...	...	...	...	2	1.9	...	...	...	...	...	37.8	...	...	...	...	...	...	...	...	47.				
9 years	1	...	...	...	1	13.1	...	...	...	...	...	38.2	...	...	...	...	...	...	...	...	33.5				
10 years	...	3	...	...	2	2.7	...	...	...	...	...	54.6	...	...	...	...	...	...	...	...	34.1				
11 years	2	4	1	2	9	3.9	...	...	...	...	...	51.1	...	...	...	...	...	...	...	...	26.6				
12 years	1	2	1	...	4	2.	...	...	...	...	...	51.1	...	...	...	...	...	...	...	...	23.4				
13 years	2	2	...	...	5	3.3	...	...	...	...	...	56.2	...	...	...	...	...	...	...	...	23.4				
14 years	...	...	1	...	1	1.2	...	...	...	...	...	51.3	...	...	...	...	...	...	...	...	23.4				
15 years	...	1	...	...	1	25.6	...	...	...	...	...	62.9	...	...	...	...	...	...	...	...	23.4				
16 years	...	1	...	...	1	4.7	...	...	...	...	...	58.9	...	...	...	...	...	...	...	...	23.4				
17 years	...	...	...	2	2	15.3	...	...	...	...	...	52.3	...	...	...	...	...	...	...	...	23.4				
18 years	...	...	...	...	...	...	...	...	...	...	...	46.1	...	...	...	...	...	...	...	...	23.4				
Total	8	14	6	9	37	...	36	47	35	54	172	...	187	210	125	170	692	...	116	140	66	115	437	...	1,338
Per cent. total examined	.5	1.	.4	.6	2.7	...	2.6	3.5	2.6	4.	12.1	...	13.9	15.6	9.3	12.7	51.7	...	8.6	10.4	4.9	8.6	32.6	...	...
Total positive	22						83						397						256						758
Per cent. positive..	36.3	63.6					43.3	56.6					47.1	52.8					45.3	54.6					56.6

TABLE No. XII

Showing prevalence of accelerated pulse and its relation to tuberculosis infection, by age, among the group of school children examined.

Age	Up to 80						80 to 100						Over 100						Total
	Positive			Negative			Positive			Negative			Positive			Negative			
	M.	F.	Total	%	M.	F.	Total	%	M.	F.	Total	%	M.	F.	Total	%			
5 years	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	
6 years	...	1	...	2.2	...	...	...	51.1	...	...	...	...	...	...	...	...	45		
7 years	...	5	...	7.3	...	...	...	67.	...	...	...	...	...	...	...	...	82		
8 years	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	102		
9 years	3	2	...	4.6	...	...	...	72.5	...	...	...	...	...	...	...	...	152		
10 years	3	3	...	4.1	...	...	...	73.7	...	...	...	...	...	...	...	...	217		
11 years	8	4	...	7.4	...	...	...	73.1	...	...	...	...	...	...	...	...	227		
12 years	5	4	...	7.5	...	...	...	69.2	...	...	...	...	...	...	...	...	199		
13 years	4	5	...	8.6	...	...	...	73.3	...	...	...	...	...	...	...	...	150		
14 years	2	...	...	5.1	...	...	...	81.8	...	...	...	...	...	...	...	...	77		
15 years	2	3	...	12.5	...	...	...	82.5	...	...	...	...	...	...	...	...	40		
16 years	...	3	...	20.	...	...	...	75.	...	...	...	...	...	...	...	...	20		
17 years	1	...	...	11.1	...	...	...	50.	...	...	...	...	...	...	...	...	18		
18 years	...	...	...	50.	...	...	...	50.	...	...	...	...	...	...	...	...	2		
Total	28	30	84		12	14	249	283	204	229	965		67	103	30	90	290	1,339	
Per cent. of total examined	2.	2.2	6.2		.8	1.	17.1	21.1	15.2	16.3	71.2		5.	72.1	2.2	6.7	21.6		
Total positive		58						532						170				760	
Per cent. positive	48.2	51.7					44.9	53.					39.4	60.5				57.5	

TABLE No. XIV

Showing glandular enlargement in regard to tuberculosis infection of 1045 white children examined.

		Supraclavicular								Anterior Cervical								Posterior Cervical								No Glands		Two Sets		Total	
		Pal.	%	S.E.	%	Mod. En.	%	Total	%	Pal.	%	S.E.	%	Mod. En.	%	Total	%	Pal.	%	S.E.	%	Mod. En.	%	Total	%		%		%		%
NON SUSPECTS	Positive	68	19.4	15	4.2	1	....	84	24.	28	8.	25	7.2	46	13.1	99	28.2	23	6.5	20	5.7	25	7.1	68	19.4	120	34.2	21	6.	350	46.1
	Negative	91	25.1	13	3.1	6	1.2	110	26.8	23	5.6	29	7.	54	13.2	106	25.9	34	8.3	10	3.9	15	3.6	65	15.8	152	37.1	24	5.8	409	53.8
	Total	159	20.9	28	3.6	7	.9	194	25.5	51	6.7	54	7.1	100	13.1	205	27.	57	7.6	30	4.7	40	5.4	133	17.5	273	35.8	45	5.9	759	72.6
SUSPECTS	Positive	22	19.3	5	4.3	2	1.7	29	25.1	11	9.5	12	10.4	8	6.9	31	26.9	3	2.6	7	6.	14	12.1	24	20.8	34	29.5	3	2.6	115	55.
	Negative	21	22.3	8	8.5	....	....	29	30.8	6	6.3	6	6.3	11	11.7	23	24.4	3	3.1	10	10.6	2	2.1	15	15.9	32	33.8	5	5.3	94	44.9
	Total	43	20.5	13	6.2	2	.9	58	27.7	17	8.1	18	8.6	19	9.	54	25.8	6	2.8	17	8.1	16	7.6	39	18.6	66	31.5	8	3.8	209	20.
TUBERCULAR	Positive	17	26.5	5	7.8	1	....	23	35.9	5	7.8	7	10.9	5	7.8	17	26.5	4	6.2	3	4.6	8	12.5	15	23.4	17	26.5	8	12.5	64	83.1
	Negative	4	30.7	....	....	1	7.6	5	38.4	2	15.3	....	....	2	15.3	4	30.7	2	15.3	1	7.6	1	7.6	4	30.7	3	23.	3	23.	13	16.8
	Total	21	27.2	5	6.4	2	2.5	28	37.6	7	9.	7	9.	7	9.	21	27.2	6	7.7	4	5.1	9	11.6	19	24.6	20	25.9	11	14.2	77	7.3
								280	26.7							280	26.7							191	18.2	358	34.2	64	6.1	1,045	

NOTE.—Pal.—Palpitated; S.E.—Slightly Enlarged; Mod. En.—Moderately Enlarged.

Cases with glands 687 out of 1045 examined.
Positive reaction to tuberculin test, 358—52%.
Negative reaction to tuberculin test, 329—48%.

Cases without glands 358 out of 1045 examined.
Positive reaction to tuberculin test, 171—47.43%.
Negative reaction to tuberculin test, 187—52.57%.

TABLE No. XV
Showing incidence of glandular enlargement among 225 normal school students.

	Supraclavicular			Anterior Cervical			Posterior Cervical			Total	%	No glands	Two sets	Total
	Pal.	Se.	Me.	Pal.	Se.	Me.	Pal.	Se.	Me.					
Normals	1	7	....	1	....	4	2	2	....	17	12.59	135	....	152
Suspects	4	1	....	....	....	1	3	1	....	10	15.62	64	1	73
Total	5	8	....	1	....	5	5	3	....	27	13.57	199	1	225

TABLE No. XVI

Showing chest conformation and winged scapulæ and the relation of these conditions to tuberculosis infection among the group of school children examined.

	Chest Conformation					Winged Scapulæ								
	Well developed	%	Moderately developed	%	Flat	%	Total	W.	%	S.W.	%	N.	%	Total
Male positive	106	30.9	167	48.8	69	20.1	342	18	10.1	46	25.9	113	63.8	177
Male negative	79	33.7	108	46.1	47	20.	234	1	1.2	14	17.9	63	80.7	78
Female positive....	121	31.8	178	46.8	81	21.3	380	16	10.8	17	11.5	114	77.5	147
Female negative ..	109	33.6	160	49.3	55	16.9	324	23	12.4	14	7.5	148	80.	185
Total	415	32.4	613	47.8	252	19.6	1,280	58	9.8	91	15.5	438	74.6	587
Total positive	227		345		150		722	34		63		227		324
Per cent. positive		54.6		56.2		59.5	56.4		58.6		69.2		51.7	55.1

TABLE No. XVII

Showing chest conformation and tubercular infection among the group of normal school students examined.

	Well developed	Per cent.	Moderately developed	Per cent.	Flat	Per cent.	Total
Male positive .....	....	....	4	100.	....	....	4
Male negative	1	20	3	60.	1	20.	5
Female positive	23	17.1	85	63.4	26	19.4	134
Female negative	10	24.3	21	51.2	10	24.3	41
Total	34	18.4	113	61.4	37	20.1	184
Total positive	23		89		26		138
Per cent. positive		67.6		78.7		70.2	75.

TABLE No. XVIII

Showing the relation of chest movement to the incidence of tubercular infection among the group of school children examined.

	Free and equal	Per cent.	Moderate	Per cent.	Limited	Per cent.	Total
Male positive	142	57.9	59	24.	44	17.9	245
Male negative	106	53.	61	35.	33	16.5	200
Female positive	132	45.5	108	37.2	50	17.2	290
Female negative	140	48.7	116	40.4	31	10.8	287
Total	520	50.8	344	33.8	158	15.4	1,022
Total positive	274	52.6	167	48.5	94	59.4	535
Per cent. positive							52.3

TABLE No. XX

Showing glandular enlargement in relation to tuberculosis infection and diseases of 1,045 white children examined.

		Supraclavicular								Anterior Cervical								Posterior Cervical								No Glands		Two Sets		Total	
		Pal.	%	S.E.	%	Mod. En.	%	Total	%	Pal.	%	S.E.	%	Mod. En.	%	Total	%	Pal.	%	S.E.	%	Mod. En.	%	Total	%	%	%	%	%		
NON SUSPECTS 759: 72.6 per cent.	Positive	68	19.4	15	4.2	1	....	84	24.	28	8.	25	7.1	46	13.1	99	28.2	23	6.5	20	5.7	25	7.1	68	19.4	120	34.2	21	6.	350	46.1
	Negative	91	22.2	13	3.1	6	1.2	110	26.8	23	5.6	29	7.	54	13.2	106	25.9	34	8.3	16	3.9	15	3.6	65	15.8	152	37.1	24	5.8	409	53.8
	Total	159	20.9	28	3.6	7	.9	194	25.5	51	6.7	54	7.1	100	13.1	205	27.	57	7.6	36	4.7	40	5.4	133	17.5	273	35.8	45	5.9	759	72.6
ORIGINALLY SUSPECTED BUT NOTHING PATHOLOGICAL FOUND 209: 20.6 per cent.	Positive	22	19.3	5	4.3	2	1.7	29	25.1	11	9.5	12	10.4	8	6.9	31	26.9	3	2.6	7	6.	14	12.1	24	20.8	34	29.5	3	2.6	115	55.
	Negative	21	22.3	8	8.5	....	....	29	30.8	6	6.3	6	6.3	11	11.7	23	24.4	3	3.1	10	10.6	2	2.1	15	15.9	32	33.8	5	5.3	94	44.9
	Total	43	20.5	13	6.2	2	.9	58	27.7	17	8.1	18	8.6	19	9.	54	25.8	6	2.8	17	8.1	16	7.6	39	18.6	66	31.5	8	3.8	209	20.
(a) OLD LESIONS, 3.96 per cent. (b) OBSERVATION, 2.5 per cent. (c) ACTIVE, .84 per cent. 77: 7.3 per cent.	Positive	17	26.5	5	7.8	1	....	23	35.9	5	7.8	7	10.9	5	7.8	17	26.5	4	6.2	3	4.6	8	12.5	15	23.4	17	26.5	8	12.5	64	83.1
	Negative	4	30.7	....	....	1	7.6	5	38.4	2	15.3	....	....	2	15.3	4	30.7	2	15.3	1	7.6	1	7.6	4	30.7	3	23.	3	23.	13	16.8
	Total	21	27.2	5	6.4	2	2.5	28	37.6	7	9.	7	9.	7	9.	21	27.2	6	7.7	4	5.1	9	11.6	19	24.6	20	25.9	11	14.2	77	7.3
								280	26.7							280	26.7							191	18.2	358	34.2	64	6.1	1,045	

Supraclavicular glands, croup, 280 cases.
With positive tuberculin reaction, 136—48.5%.
With negative tuberculin reaction, 144—51.5%.

Anterior cervical glands, croup, 280 cases.
With positive tuberculin reaction, 147—52.5%.
With negative tuberculin reaction, 133—47.5%.

Posterior cervical glands, 191 cases.
With positive tuberculin reaction, 107—56%.
With negative tuberculin reaction, 84—44%.

Without glands, 358 cases.
With positive tuberculin reaction, 171—47.4%.
With negative tuberculin reaction, 187—52.6%.

TABLE No. XIX

Showing the relationship of chest movement to the incidence of tubercular infection among the group of normal school students examined.

	Free and equal	Per cent.	Moderate	Per cent.	Limited	Per cent.	Total
Male positive	1	50.	1	50.	...	...	2
Male negative	...	...	1	...	...	...	1
Female positive	4	15.3	8	30.7	14	53.8	26
Female negative	3	50.	...	...	3	50.	6
Total	8	22.8	10	28.5	17	48.5	35
Total positive	5		9		14		28
Per cent. positive		62.5		32.1		50.	

TABLE No. XXI—Continued.

TUBERCULOUS										NON-TUBERCULOUS									
	Year		Arrested	App. Arrest	Quiescent	Improved	Unimproved	Died	Hopeless	Untreated	Cured	Improved	Unimproved	Untreated	Died	Undiagnosed	Civilians	S. C. R.	Total
TUBERCULOSIS Pulmonary Moderately Advanced (a)	1918	Civ. S. C. R.	.. ..	1 5	1 1	4 ..	1 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	7 ..	.. 6	.. 1
	1919	Civ. S. C. R.	2 ..	5 32	12 9	2 ..	1 3	.. 1	.. ..	7 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	27 ..	48 ..	75 ..
	1920	Civ. S. C. R.	7 ..	8 10	11 5	3 1	.. ..	.. ..	.. ..	5 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	27 ..	23 ..	50 ..
	1921	Civ. S. C. R.	.. ..	2 1	5 1	.. ..	1 1	.. ..	.. ..	4 2	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	12 ..	5 ..	17 ..
TUBERCULOSIS Pulmonary Moderately Advanced (b)	1918	Civ. S. C. R.	.. ..	2 3	7 7	4 1	1 3	.. ..	.. ..	1 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	15 ..	14 ..	29 ..
	1919	Civ. S. C. R.	.. ..	7 17	16 11	18 1	2 1	.. 2	.. ..	6 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	49 ..	33 ..	82 ..
	1920	Civ. S. C. R.	.. 4	2 10	12 15	15 1	1 1	.. 1	.. ..	10 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	40 ..	33 ..	73 ..
	1921	Civ. S. C. R.	.. 1	8 4	13 8	13 4	6 2	.. ..	.. ..	6 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	46 ..	20 ..	66 ..
TUBERCULOSIS Pulmonary Moderately Advanced (c)	1918	Civ. S. C. R.	.. ..	1 ..	1 ..	2 ..	1 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5 ..	.. ..	5 ..
	1919	Civ. S. C. R.	.. ..	.. 1	3 ..	.. ..	.. ..	1 ..	.. ..	1 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5 ..	1 ..	6 ..
	1920	Civ. S. C. R.	.. ..	.. 4	.. 5	2 ..	3 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	5 ..	11 ..	16 ..
	1921	Civ. S. C. R.	.. ..	.. ..	6 9	6 3	1 1	.. ..	.. ..	1 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	14 ..	13 ..	27 ..
TUBERCULOSIS Pulmonary Far Advanced (a)	1918	Civ. S. C. R.	.. ..	1 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 ..	.. ..	1 ..
	1919	Civ. S. C. R.	.. ..	1 1	3 4	1 3	1 3	.. ..	.. ..	2 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	8 ..	11 ..	19 ..
	1920	Civ. S. C. R.	.. 2	.. 6	12 13	5 1	.. 2	.. ..	.. ..	2 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	19 ..	24 ..	43 ..
	1921	Civ. S. C. R.	.. ..	.. ..	1 1	.. ..	1 2	.. 1	.. ..	.. 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	2 ..	5 ..	7 ..
TUBERCULOSIS Pulmonary Far Advanced (b)	1918	Civ. S. C. R.	.. ..	1 ..	4 ..	4 ..	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	11 ..	1 ..	12 ..
	1919	Civ. S. C. R.	.. ..	.. 3	8 4	12 1	5 8	3 3	1 1	1 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	30 ..	21 ..	51 ..
	1920	Civ. S. C. R.	.. ..	1 6	12 9	17 8	6 7	4 1	.. ..	10 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	50 ..	31 ..	81 ..
	1921	Civ. S. C. R.	.. ..	2 4	5 9	16 6	6 6	2 3	.. ..	5 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	36 ..	29 ..	65 ..
TUBERCULOSIS Pulmonary Far Advanced (c)	1918	Civ. S. C. R.	.. ..	.. ..	1 ..	5 ..	3 ..	1 ..	.. ..	3 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	13 ..	.. ..	13 ..
	1919	Civ. S. C. R.	.. ..	1 ..	2 ..	8 ..	4 1	2 ..	1 1	3 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	21 ..	2 ..	23 ..
	1920	Civ. S. C. R.	.. ..	.. ..	.. 2	19 5	15 4	18 3	.. 1	13 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	65 ..	15 ..	80 ..
	1921	Civ. S. C. R.	.. ..	.. ..	4 3	10 8	10 8	5 2	.. ..	3 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	32 ..	21 ..	53 ..
TUBERCULOSIS Pulmonary Hopeless	1918	Civ. S. C. R.	.. ..	.. ..	.. ..	.. ..	4 ..	4 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	8 ..	.. ..	8 ..
	1919	Civ. S. C. R.	.. ..	.. ..	.. ..	1 ..	.. 6	14 3	5 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	20 ..	9 ..	29 ..
	1920	Civ. S. C. R.	.. ..	.. ..	.. ..	.. ..	6 ..	1 5	.. 1	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	7 ..	6 ..	13 ..
	1921	Civ. S. C. R.	.. ..	.. ..	.. ..	1 ..	.. ..	15 2	3 2	1 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	20 ..	4 ..	24 ..
TOTALS		Civ. S. C. R.	6 23	88 153	203 144	241 62	78 58	76 31	15 10	119 10	.. ..	31 25	12 7	27 3	6 1	15 1	917 ..	528 ..	.. ..
TOTAL			29	241	347	303	136	107	25	129	..	56	19	30	7	16	..	..	1445

TABLE NO. XXII.

Summary of Table No. XXI.

	TUBERCULOUS							NON-TUBERCULOUS						
	Arrested	Appar. Arrest.	Quiescent	Improved	Unimproved	Died	Hopeless	Untreated	Improved	Unimproved	Untreated	Died	Undiagnosed	Total
NON-TUBERCULOUS.....	..	..	..	..	..	..	..	..	45	18	17	7	..	87
OBSERVATION	1	..	..	1	..	..	..	3	11	1	13	..	16	46
TUBERCULOSIS														
Non-Pulmonary	..	..	1	18	1	..	1	3	..	..	..	..	..	24
Incipient (a)	7	44	23	19	2	..	..	12	..	..	..	..	..	107
Incipient (b)	4	41	59	40	6	..	..	16	..	..	..	..	..	166
Incipient (c)	1	6	9	14	2	..	..	2	..	..	..	..	..	34
Moderately Advanced (a)	9	64	45	10	7	1	..	19	..	..	..	..	..	155
Moderately Advanced (b)	5	53	89	57	17	3	..	26	..	..	..	..	..	250
Moderately Advanced (c)	..	6	24	13	7	2	..	2	..	..	..	..	..	54
Far Advanced (a)	2	9	34	10	9	1	..	5	..	..	..	..	..	70
Far Advanced (b)	..	17	51	64	40	17	2	18	..	..	..	..	..	209
Far Advanced (c)	..	1	12	55	45	31	3	22	..	..	..	..	..	169
Hopeless	..	..	..	2	..	52	19	1	..	..	..	..	..	74
TOTAL.....	29	241	347	303	136	107	25	129	56	19	30	7	16	1445

TUBERCULOSIS IN SASKATCHEWAN BY PROVINCIAL ELECTORAL
DIVISIONS AS REPORTED BY PHYSICIANS.

DEATHS FROM TUBERCULOSIS IN
SASKATCHEWAN BY PROVINCIAL
ELECTORAL DIVISIONS FOR THE
YEARS 1918, 1919, 1920.

Division	Active	Observation	Arrested	Total	Division	Number
Arm River	9	2	4	15	Arm River	14
Biggar	27	7	8	42	Biggar	7
Bengough	6	1	2	9	Bengough	2
Cannington	2	...	1	3	Cannington	4
Cut Knife	7	...	...	7	Cut Knife	4
Cypress	1	1	1	3	Cypress	9
Cumberland	...	...	...	...	Cumberland	2
Canora	20	9	5	34	Canora	22
Carnduff	...	...	...	...	Carnduff	1
Estevan	10	6	2	18	Estevan	15
Elrose	15	7	1	23	Elrose	6
Francis	11	6	5	22	Francis	7
Happyland	5	2	1	8	Happyland	13
Herbert	1	1	2	4	Herbert	...
Hanley	12	7	7	26	Hanley	7
Humboldt	7	2	...	9	Humboldt	9
Ile à la Crosse	...	...	...	...	Ile à la Crosse	9
Jack Fish Lake	...	...	...	...	Jack Fish Lake	1
Kindersley	15	5	1	21	Kindersley	6
Kinistino	14	1	...	15	Kinistino	15
Kerrobert	45	12	11	68	Kerrobert	5
Lumsden	93	42	96	231	Lumsden	85
Last Mountain	18	10	21	49	Last Mountain	15
Lloydminster	21	14	14	49	Lloydminster	8
Milestone	66	16	11	93	Milestone	16
Morse	1	1	5	7	Morse	12
Moose Jaw	121	25	64	210	Moose Jaw	78
Moosomin	69	16	13	98	Moosomin	14

TUBERCULOSIS IN SASKATCHEWAN—Continued

DEATHS FROM TUBERCULOSIS IN
SASKATCHEWAN—Continued.

Division	Active	Observation	Arrested	Total	Division	Number
Maple Creek	12	2	6	20	Maple Creek	24
Moose Mountain	51	15	15	81	Moose Mountain	8
Melfort	14	5	5	24	Melfort	3
Manitoba	1	...	...	1	Manitoba	...
Notukeu	8	5	5	18	Notukeu	4
North Qu'Appelle	11	5	8	24	North Qu'Appelle	48
Pipestone	4	2	7	13	Pipestone	10
Pheasant Hills	26	16	11	53	Pheasant Hills	16
Pelly	10	4	7	21	Pelly	6
Prince Albert	42	22	113	177	Prince Albert	38
Rosetown	20	17	8	45	Rosetown	17
Rosthern	18	5	28	51	Rosthern	29
Redberry	...	...	...	...	Redberry	11
Souris	1	...	2	3	Souris	4
South Qu'Appelle	19	9	16	44	South Qu'Appelle	45
Swift Current	12	7	10	29	Swift Current	14
Saltcoats	10	9	3	22	Saltcoats	6
Shellbrook	4	2	10	16	Shellbrook	14
Saskatoon	43	14	34	91	Saskatoon	80
The Battlefords	40	18	17	75	The Battlefords	26
Thunder Creek	14	8	31	53	Thunder Creek	9
Turtleford	14	4	1	19	Turtleford	...
Touchwood	11	11	...	22	Touchwood	16
Tisdale	3	3	...	6	Tisdale	2
Vonda	8	2	9	19	Vonda	4
Weyburn	24	6	8	38	Weyburn	16
Wynyard	40	14	32	86	Wynyard	15
Willow Bunch	13	4	5	22	Willow Bunch	10
Wadena	11	5	2	18	Wadena	5
Wilkie	31	14	22	67	Wilkie	6
Yorkton	24	8	14	46	Yorkton	19

117 deaths not given.

GOVERNMENT AIDED HOSPITALS.

Saskatchewan.

Place	Name of hospital	No. of beds	No. of T.B. patients
Canora	Hugh Waddell	30	2
Central Butte	Endfield Victorian	12	0
Davidson	Union	12	0
Doddsland	Association	22	0
Edam	Lady Minto Union	10	0
Eston	Union	15	0
Humboldt	St. Elizabeth	20	0
Indian Head	General	22	0
Kerrobert	Union	25	0
Kindersley	Union	28	0
Lloydminster	Union	34	0
Lampman	Union	12	0
Lashburn	Cottage	14	0
Maple Creek	General	24	0
Melfort	Lady Minto	23	0
Melville	Municipal	26	0
Moose Jaw	General	110	2
Moose Jaw	Providence	80	2
Moosomin	General	14	0
North Battleford	Notre Dame	70	0
Ponteix	St. Gabriell	19	0
Prince Albert	Holy Family	69	1
Regina	General	200	3
Regina	Grey Nuns	110	10
Rosetown	Union	22	0
Saskatoon	St. Paul's	150	7
Saskatoon	City	140	4
Scott	Municipal	18	0
Shaunavon	Union	14	0
Swift Current	General	38	0
Unity	General	13	0
Vanguard	Victorian Order	12	0
Wadena	Union	12	0
Wakaw	Anna Turnbull	29	1
Weyburn	Municipal	50	0
Yorkton	Queen Victoria	29	0

NOTE.—No. of hospitals, 37; No. of beds, 1,614; No. of T.B. patients, 32.

THE CAMPAIGN AGAINST INFANTILE TUBERCULOSIS IN FRANCE AND THE PRESERVATION OF CHILDHOOD AGAINST ITS RAVAGES BY THE SYSTEM OF THE "OEUVRE GRANCHER."

Methods of Oeuvre Grancher.

In my position as secretary of the organisation I will explain as briefly as possible its methods. The first problem confronting Dr. Grancher was the method of finding healthy peasant families in the country. It was his idea to address certain men who were his former students, physicians in the country. They were well acquainted with the peasants who lived on the neighbouring farms of their particular rural community. They could tell if the people were honourable, if they enjoyed good health and were capable of bringing up children confided to their care. They could tell if the peasants were well enough placed financially, which is an indispensable point, for we do not pay a very large price for boarding the child. It is necessary that these persons taking the children do not do so in the interest of money; we do not wish to make a business of the work, we do not wish profession; we wish only those persons who will take the children as companions. It is the country physicians who choose, frequently gratuitously, the house in which we place our children.

At the beginning we especially chose families possessing other children. We have since learned to recognise that this presents certain inconveniences; there are at times jealousies, rivalries, etc. More often now we take the homes of peasants which are so often seen, the children are already married and established in life, families remaining alone, a middle aged couple, happy at having the company of a child. I know of old peasants perfectly enchanted at having a little girl with them who, for instance, can read the newspapers to them. We do not object if they are not allowed to read too diverse facts. In this way we have made most excellent choices, and many physicians are able to designate to us from their own clientele as many as thirty families of this sort.

We always place the brothers and sisters together, in this way not suppressing the family tie. Our organisation serves as a sort of guardian, an intermediary between the peasant family and the Parisian family. The latter confides the child to us with the following formula: "You have designated such and such a family in the country; I confide by your intervention my child to Mr. Blank who will care for him as his own and who will occupy himself with his instruction and religious education."

Our organisation takes children from 3 to 15 years of age. Children younger than that we accept only occasionally, placing them in a nursing home but in a special way. After having had a number of children, it sometimes happens that the exhausted mother develops tuberculosis. If this occurs we take all the children, over 3 and under 13, treating the younger ones if there are any, in a different way.

The children thus placed in the peasant families pass all of their school life with them, remaining our pupils even if the parents themselves disappear.

In cases in which the parents are cured, happy results to which we have contributed by taking their children, they are returned to them at the age of 13 years. We have thus assisted the parents in the upbringing and instruction of their children, particularly the mother, who has not been obliged to occupy herself exclusively with them and has thus had an opportunity of being more easily cured.

We take only the healthy children. If they are ill, we refuse them without pity. It would be dangerous indeed to instal among the country peasants children who could develop tuberculosis. We do not even take suspected children, those having the signs of latent tuberculosis. Those are sent to the vacation colonies or sanatoria, or are placed in open air institutions, but are not placed with us. For them the ideal is the sanatorium-school of which I have previously spoken. Further details are given in the brochures of the society.

We require a certificate stating that the father, mother, sister, or brother is affected with tuberculosis, but that the child is healthy. Furthermore, we ask for the birth and baptismal certificates in order to place the child in the religious surroundings desired by the parents.

The children supplied with their papers pay a visit to the central office of the organisation. There they are outfitted with clothes, are operated on if

necessary for adenoid vegetations in order to forestall throat infections, and then, in small groups, they are conducted to their destination by the devoted women who serve as patronesses.

The children are seen daily, one may say, by the physician, who with a small motor car can make his round of country visits; he sees them on his route or passes by way of the school and requests information as to their condition from the teacher or again from the curé. Further than that, each year a certain number of us, whether myself as general secretary, or others who wish to join me, make a complete tour of the colonies of our small protégés.

The results are unquestionably marvelous. Not one of the children has become tuberculous. I am wrong to say not one; since 1904 we have lost three children, who died of tuberculous meningitis in the first four weeks following their arrival in the society centres. That is to say, they were children who, despite appearances, had departed while incubating tuberculosis and died shortly after their arrival. One can be assured that aside from these cases, our children have all been definitely saved from tuberculosis.

When the children have reached the age of 13 years, if the parents are still living, we ask them if they still desire their children. Many have so fully appreciated the service which we have rendered to them and to their children that they request us to find for the children a suitable place in the country.

The parents, at least those who are ill, are authorised to pass forty-eight hours with their children two or three times a year.

In case of the death of the father or mother, the surviving one occasionally recalls them. This is what usually happens, if it is the mother who has survived the father, dead of tuberculosis.

As the danger of contamination no longer exists, we willingly return the children, frequently enough by that time beautiful children, happily fortified and strengthened for the rest of their existence. If it is the father who survives, since his home is now non-existent, he is apt easily to forget the children and they are rarely reclaimed.

In this and other ways there remains for us a considerable number of children, in the first place, those who have become orphans. These are adopted, morally and actually, sometimes financially, by their foster parents. We know of such a family of country people, in the Cher, a home which enjoyed no children, and who recently said to us: "We have no children, if the little one is agreeable all that we have will be his."

The Grancher Society renders a true social service: in preventing the propagation of tuberculosis, in giving to its children a good moral education, in making good future French men and women, and as I have said, in often bringing them back to the life of the country, so much more healthy and normal than that of the large cities.

There is also, on the other hand, an economic result of which I will speak incidentally. To cure a case of florid tuberculosis is very expensive to a society, to the assistance publique or to a private charity.

GROWTH OF THE SOCIETY.

Our society is developing. It counted at its beginning twenty-seven patients. Before the war it counted 810. It is now reduced to 400. I might state that many of our children have entered the army and a certain number have died in France. Speaking only of the Parisian branch, it is certainly growing, thanks to the sacrifices of charity and thanks also to certain subscriptions which are received from the government, from the general council and from the municipal council.

TECHNIQUE OF THE TUBERCULIN TEST.

The tuberculin used was secured from Park, Davis and Company, Walkerville laboratories, and was used full strength; site, upper part of forearm blunt scarifier; three abrasions; two for tuberculin and one for control; site of test cleansed with alcohol. Readings made at the end of forty-eight hours, and, if negative, repeated once.

CLINICAL SERVICES.

American Public Health News, March, 1920.

"The most practicable and efficient means for securing early diagnosis lies in the instituting of periodic clinical services in every locality in the state. In countries where there is a tuberculosis hospital, the superintendent and other members of the staff should act as examining physicians and consultants to the physicians in the country, supplying their services gratuitously. In countries where there are no such institutions, similar services should be provided, the examining physician to be a recognised tuberculosis diagnostician who is not engaged in private practice in the locality. It is intended that efforts shall be made looking to the establishment of such clinic service throughout the state."

"Of all the measures for the control of tuberculosis, this is the most fundamental and vital. The interests of the individual and those of the community demand such early diagnosis for it is by means of the discovery of the disease in its incipency and by the placing of the patient under proper medical and sanitary supervision that an arrest of his disease is practically assured and the other members of the community are protected against infection."

CLIMATE IN RELATION TO THE TREATMENT
OF TUBERCULOSIS.

Osler says in speaking of climatic treatment: "This, after all, is only a modification of the open air method. The requirements of a suitable climate are a pure atmosphere, an equable temperature not subject to rapid variations, and a maximum amount of sunshine. Conditions which should influence the choice of a locality are good accommodations, good food, and the patient be under the care of a competent physician."

Lawrason Brown, of Saranac, says: "The value of certain climates has in recent years been called into question and today rests upon personal belief and experience. Much has been written and little proved. There is no specific climate for pulmonary tuberculosis, and climate alone is of little avail. Without doubt many of the effects attributed to climate can be ascribed to change of climate; change from a 'good' to a 'bad' climate often produces excellent results. In general, patients in acute stages should be kept at home. Robust patients in subacute stages may be sent to any climate. Patients with advanced fibroid disease and delicate patients with subacute or chronic ulcerative disease need a climate of protection, neither too cold nor too high. But those in early stages will do well in almost any climate."

Pottinger, in his chapter on climate, says: "Formerly climate was thought to be the chief factor in the treatment of tuberculosis. Today, however, we know that the most important factor in the treatment of tuberculosis is intelligent guidance. The great faith in climate which is still held by many is a remnant of the 'let alone' policy of treating tuberculosis rather than a carefully established fact." After going into details as to why the location of his own private sanatorium of Monrovia, Cal., is so desirable, he states. "While the discomfort and monotony to the patients would probably be greater in less favourable localities, yet the result would not differ as much as might be supposed."

T. S. Bullock in a paper read before the National Tuberculosis Association in 1906, after quoting statistics to show that the climate of New Mexico was particularly suitable for the treatment of tuberculosis, makes the statement: "We should therefore have sent to our western institutions every case in which the patient may be sent far from home." Four years later, however, he wrote: "I must emphatically maintain that no consumptive should ever be sent away if it is not certain that he will have the good care and management in the distant climate as he could obtain at home."

VISITING NURSES AND THEIR IMPORTANCE IN TUBERCULOSIS WORK.

For the purpose of enabling a visiting nurse to render the best service to a district, she should be equipped with every information to assist her. When going into a district, especially when it is proposed to deal with tuberculosis, she should have in her possession:

1. A good map of the district.
2. A spot map showing deaths from tuberculosis during the last three to five years.
3. A spot map showing cases reported during the last three years which cases are now living.
4. List of physicians in the district with addresses.
5. List of health officers and registrars of vital statistics.
6. Memorandum of present status of anti-tuberculosis work in the district, location of opposition if any, and cautionary instructions.
7. Specific instructions concerning the work she is expected to perform, including forms for report and nature of the reports required.

During the progress of the work the nurse should be in constant touch with the anti-tuberculosis organisation. No family or patient under the care of a physician should be visited by the nurse without the consent of the physician. When visiting families of those who have died during the last five years from tuberculosis, an effort should be made through enquiry of physicians, undertakers, and others, to gather some information concerning the social and financial status of the family before visiting it in order that visits may be avoided where they will be resented. (There is usually some way to learn the present status of the health of such families without calling upon them.)

The nurse should give out no material for publication. Unless otherwise directed, a report should be mailed on Saturday of each week to the department, covering the seven days preceding and including the date of the report.

The nurse should be supplied with the names of all reported cases and deaths in her district including the names of the reporting physicians.

Upon entering any nursing district a nurse should immediately advise the health officer of her presence, inform him of her plans, and request his advice and co-operation, especially with regard to the physicians and important local conditions. The nurse should personally visit all the local physicians or such of them as have reported the tubercular cases, and should:

1. Seek their co-operation and obtain from them the necessary data concerning private tubercular cases, or arrange to visit such patients to obtain the data if necessary.

2. Explain the need of her visitation of families in order to obtain data of the remainder of the family.

3. Explain the need of her visitation of patients not reporting frequently to the physicians.

4. Offer to visit tuberculous or any suspected cases of former tuberculous patients to ascertain their present status and to urge their re-examination.

The nurse should constantly endeavour to ascertain the exact number of actually diagnosed and suspected cases present in her district by having all suspected and exposed persons examined.

In urging persons to be examined, the nurse should recommend the patient to consult the usual attending or family physician, but if such patient cannot afford to pay for his services, she should first report this fact to the physician who usually attends the person, and then advise the tuberculosis clinic. If there is no clinic, the patient should be referred to such physicians as will make the examination free.

The nurse should, so far as practicable, obtain the co-operation and support of all charitable organisations and of such visiting nurses and other social service workers as may be in the community. Incidental to her visitation of families, the nurse should constantly endeavour to have a sputum examination made of all persons who are suspected of tuberculosis, and should induce all positively diagnosed cases to enter a suitable hospital or sanatorium for treatment. Upon discovering any relief or any other non-medical problem in a home, the nurse should, with the consent of the family and its physician, refer such conditions to the proper public or private agencies.

When in doubt as to the correct policy or procedure she should receive instructions from the central office of the tuberculosis association.

The nurse should specifically avoid the following:

1. Actions which may meet with the disapproval of the physicians whose consent and co-operation should be obtained in advance. (Here is a chance to ascertain whether a given family or suspect is a proper subject for free treatment.)

2. Visiting homes immediately after the death or burial of a patient. It is better to wait for several days or a week, unless she has previously become a friend of the family.

3. Entirely avoid first visits to families concerning whom all necessary information can be obtained from the attending physician or health officer.

4. Visiting families concerning whom some other responsible agency can furnish the necessary data—for instance, other visiting nurses, social workers or local charitable organisations.

5. Visitation of families already being called upon by nurses without being introduced by such nurses, or seeking the necessary data from them.

To summarise, the duties of a public health nurse insofar as tuberculosis is concerned, should be:

1. To discover, correct and prevent any unsanitary or social condition detrimental to the health and welfare of the community.

2. To seek out symptoms of disease and physical disability in co-operation with parents, physicians, dentists, hospitals, municipalities, and other welfare organisations.

3. To educate:

- (a) *Citizens* and *organisations* of the community by lectures in home nursing, first aid, and other health conferences.

- (b) By instructions to parents and demonstration in the homes, emphasising the prevention of disease and physical disability.
- (c) *Children* by school-room talks on personal hygiene, little mother lectures, first aid demonstrations, health crusades and nutrition classes.

It would appear from the foregoing that the work of the public health nurse is practically all educative, actual bedside nursing being undertaken only in time of epidemic, in an emergency, and to demonstrate nursing care to another member of the household.

To the public health nursing services of the state of New York and of the province of Manitoba, your Commission are greatly indebted for many of the suggestions referred to above.

COPY of a Resolution passed at the last Annual Convention of the Western Canada Live Stock Union.

Whereas the members of the Western Canada Live Stock Union in the annual convention here assembled, heartily approve of the principle of the accredited herd plan as carried on by the Health of Animals Branch of the Dominion Department of Agriculture; and

Whereas in its opinion this principle could profitably be extended both in the interests of the live stock men and the health of the nation:

Therefore be it resolved as the opinion of this meeting (1) that no restriction be placed on the number of pure bred animals in a herd eligible for accreditation, and (2) that on receipt of a petition by a two-thirds majority of the votes polled by the ratepayers in any municipality or district organised by the Veterinary Director-General, there shall be established in such districts a tuberculosis-free area, all cattle in which shall be tested in the manner now in operation for the establishment of accredited herds.

MOTION passed at the Annual Convention of the Canadian National Association of Trained Nurses, June, 1922.

That the recommendation be made from this association in annual convention, to all of the training schools of Canada, that three months special training in tuberculosis, the care of tubercular patients and the prevention of the spread of the disease, be given where possible by all training schools before graduation of the students.

COPY of a Resolution passed at the last Annual Convention of the Saskatchewan Medical Association.

Whereas the accommodation at the Saskatchewan Sanatorium, Fort Qu'Appelle, during the past has been entirely inadequate, resulting in delay in the admission of patients; and

Whereas a great many patients have been, and are being refused admission on account of lack of accommodation, who would have benefited by treatment:

Therefore be it resolved that the Saskatchewan Medical Association in annual convention here assembled urge upon the government the necessity of providing adequate accommodation for all cases requiring treatment for tuberculosis.

COPY of a Resolution passed at the last Annual Convention of the Association of Rural Municipalities, held in Saskatoon on March 8-10, 1922.

GRANT TO SANATORIUM.

Whereas section 201a of The Municipal Act is manifestly very unfair in that it provided that the minimum grant for the benefit of the Qu'Appelle Sanatorium shall be the same from a municipality of six townships as from one of larger area:

Therefore be it resolved that this association request the provincial government to introduce legislation to amend the said section 201a to read:

"The council of each municipality within the province shall make an annual grant of at least ten cents for each assessed quarter section of land therein;" and that the government be requested to amend The City, Town and Village Acts to provide that each urban municipality shall also make an annual grant equitable with the amounts granted by the rural municipalities, provided that if an equitable amount cannot be determined that the amount be fixed at not less than 10c per head of the population in each city, town and village according to the last Dominion census for the benefit of the sanatorium, etc.

Provided further that if the above legislation is not made effective in 1923, that section 201a be repealed.—Carried.

COPY of a Resolution passed at the last Annual Convention of the Saskatchewan Cattle Breeders' Association.

While this meeting of the Saskatchewan Cattle Breeders' Association approves of the federal system of accreditation, we would ask that the regulations be revised in order that there be no limitation as to the number of pure bred to admit of accreditation;

And whereas herd accreditation has created a sentiment in favour of the testing of cattle for all association sales;

And whereas breeders with less than twelve (12) head are unable to share in the advantages of the accredited system;

And whereas there seems to be a wide difference in prices received for re-actors at point of marketing under the accredited herd plan:

Therefore be it resolved that we ask the Dominion Health of Animals Branch to test all bulls and females consigned to sales free of charge. That all reactors be slaughtered and the owners compensated as under the accredited herd system, providing owners have already applied for accreditation;

And further be it resolved that the Saskatchewan Cattle Breeders' Association appoint a committee to co-operate with other organisations with a view to obtaining protection for breeders and enabling them to secure adequate value for salvage.

February 14, 1922.

Whereas the dread disease, bovine tuberculosis, has gained much headway among the cattle of this province; and, whereas this is a menace to the public health through the use of meat and milk from diseased cattle:

Therefore be it resolved that we urge upon our governments the necessity of having all cattle tested for this disease, and we hope that our provincial and federal governments will co-operate towards this end.

[illegible][illegible]

CARR McLEAN, TORONTO FORM #38-297

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